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Comparison of Government Bonds in Selected Countries

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1 INTRODUCTION

In nowadays, economy, which is one of the most vital factors to each country, has been taken more and more responsible with the development in one country. The economic power and technology support are also the important benchmark. The economic system is the basis to develop the other two. The bond market is a vital part in this economic system. Also the government bonds market is an essential section in the bond market.

In this thesis, the main aim is to compare the government bonds in China, the USA, Germany and Brazil step by step. First we must clear the definition, characters and functions of bonds and bond market. Above this knowledge, the thesis is written to explain the government bonds and government bond markets by describing its issuing methods, main participants, characters, functions and specific government bonds in each country. It is a meaningful thing to research the diversified government bonds in the four countries and how these government bonds are functioning in the domestic economic system. After finishing this thesis, it will be clear about the government bonds and government bond markets in each selected country.

In general, the thesis is divided into three parts included introduction and conclusion. The first part introduces the characteristics of bond market. It has a specific description of bond and bond market, which contains definition, structure, types and characteristics. In second part, there is an introduction of bond markets in selected countries. They are China, the USA, Germany and Brazil. The bond markets are described in structure, characteristics, types and main participants. In the last part, the comparison of government bonds in each country is the most important. The thesis gives a description of government bond structure, characteristics, main types, and also comparison of government bonds participants, types, history, yield, maturity and ratings in those selected countries.

2 CHARACTERISTICS OF BOND MARKET

The bond market has been an indispensable part of domestic economy. It is an organized market for suppliers of fund to trade bonds. Bond market also known as debt market is a significant part of financial market. The bond market belongs to capital market, with stock market. It provides a place for investors to trade long-term loans and equity capital.

2.1 Definition and Characteristics of Bond

Bond, as we know, is an important investment instrument. It presents a debt. It's less risky than stocks and it has certain maturity. Also the yield depends on the interest rate which is set before the bonds issued. In bond market, bonds can be divided by treasury bonds, corporation bonds and municipal bonds (Mishkin, 2006). There are three important factors investors need to consider before buying a bond. The first is *the person issuing the bond*. The second is *the interest*, or the coupon investors will receive. The third is *the maturity date*, the day when the borrower must pay back the principal to the lender. Bond is long-term debt obligations issued by corporations, municipalities and government units (Mishkin, 2006). The bond issuers promise to pay a specified amount in the future on the maturity of the bond, the face value, plus coupon interest on the borrowed funds.

Compared with stock, bond is safer because it has certain maturity, which the stock does not. And the yield is fixed since the bond is bought without the consideration of profit phenomenon. The bond is usually issued by the government, corporates or municipals. The stocks is usually issued by listed companies.

There are some important functions of bond in a country . The first is *financing, leading capital flow*. It can lead the cash flow by issuing bonds. The next is *macroscopic arrangement, adjustment and control*. The bond market can follow the strategies of Cenral Bank and control the bond industry's development. It can be divided into primary and secondary market , field and over the counter market. Another classification is domestic and foreign bond market (Fabozzi, 2014).

2.2 Types of Bonds

As one of the most important basic instruments of capital markets, bonds, which are traded as debt securities, can be divided into three main types according to the issuers. The treasury bonds, municipal bonds and corporate bonds, all play a vital role in bond market.

The treasury bonds, as the name, are issued by the central government for financing the national debt and other government expenditures. Hence, this kind of bonds has no or less credit risk than other bonds because the bonds are issued by government and backed by the full faith and credit of the government. This kind of bonds can be classified into three types, treasury bills, treasury notes and treasury bonds according to the maturity (Mishkin, 2006). The maturity of the former is usually less than one year. The treasury notes have the maturity of 1 to 10 years. And the last type, treasury bonds, have the maturity of 10 to 30 years.

Municipal bonds, or “munis” for short are securities issued by state and local government to fund either temporary imbalances between operating expenditures and receipts or to finance long-term capital outlays for activities such as school construction, public utility construction or transportation systems. Tax receipts or revenues generated from a project are the source of repayment on municipal bonds (Fabozzi, 2014).

Corporate bonds, which are issued by the corporates, have higher yield than treasury bonds and municipal bonds because they face a higher default risk and credit risk than treasury bonds and municipal bonds. And the risk of default and credit is related to the operating phenomenon of the issuing companies. It is obvious that the higher yield is, the higher credit risk investors will face. Purchasing bonds from well-established and profitable companies is much less risky than purchasing bonds from firms in financial trouble (Fabozzi, 2012).

2.3 Definition and Structure of Bond Market

Bond market is market in which bonds are issued and traded. Bond market is comprised with two parts. The issue market and circulation market, or primary market

and secondary market (Fabozzi, 2014). The issue market, which is also called as primary market, is the market for issuing units to issue new bonds. The function of primary market is to bring the bonds which are issued by the government, financial institutions and corporates to raise capital to the investors. New issues of financial instruments, such as bonds, are sold to the initial suppliers of funds.

The *circulation market*, is also named as secondary market, is a market for the bonds which are issued to trade and sell. While the bonds are purchased, a relationship of a certain creditor's right and debtor's right is built up. But investors can still trade and circle these issued bonds on secondary market. And there is no doubt that investors can transform the bonds into cash. The bond secondary market trades bonds once they are issued (Savnder, 2012). And the secondary market offer buyers and sellers liquidity. Not only the information about the value and price of bonds but also the ability to turn bonds into cash quickly.

The primary market and secondary market function together in the bond market and work perfectly with each other. The primary market is the source of the whole bond market and it is also the premise and basic of secondary market. The developing secondary market is the important support to primary market and it is also the essential conditions for the enlargement of primary market.

2.4 Characteristics of Bond Market

In general, the characteristics of bond market is based on the nature of bond. The first one is that bond market can *provide the investment or financing instruments* which has low risks to all investors and financiers in the social. Because the bond market is an organized market which is used for transactions of investment and financing. In which also has many investment and financing products and services. And it provides a place for government to organize and regulate. The second is that bond market is *an important carrier to conduct the policy of central bank*. Central bank relies on the bond market to buy and sell government bonds and adjust the money supply as open market operations. The another important characteristic is that bond market can functions as *a guide of capital flows* to the ascendant enterprises in order to optimal allocation of capital. The last characteristic is that bond market is *an interdependent entity of issue market* (primary market) and circulation market

(secondary market). The issue market is the basis and premise of circulation market. The circulation market is necessary condition of the expansion of issue market. In most countries, a mature and improve bond market is a basis of national financial market (Savnder, 2012). It can provide low risk investment and financial instruments for the people who want to invest or raise money.

2.5 Types of Bond Market

According to the difference of issuing body, the bond market can be divided into treasury bond market, municipal bond market and corporate bond market (Fabozzi, 2014). All of these three are very important to support the bond market efficiently.

Treasury bond market is the market to trade treasury bills, treasury notes and treasury bonds. The treasury bond market consists of treasury bond circulation market and issue market. The central bank buys the treasury bonds at the ways of purchasing them directly, repurchasing treasury bonds and against-repurchasing agreement to carry out the open market operation. This behavior is to balance the demand and supply of basic currency. And the treasury bond is also used for adjust interest rate. The operation of treasury bond market can combine the currency policy with fiscal policy efficiently. In treasury bonds market, the government issues and repay for the treasury bonds by the way of fixed profit selling and public bid in the transaction of treasury bond market. The treasury bond market has the function to re-allocate the social assets. And the government can lead the capital direction and active the transaction by the treasury bond market.

The municipal bond market is the market to trade between the bonds that issued by states or local government. The participants in municipal bond market are usually local government, state government, local financial institutions owned by government and investors (Mishkin, 2006). The transaction volume of municipal bonds has increased a lot because with the quick economic development of local areas, the local government has stronger and stronger power in economy to support the repaying debt. Compared with treasury bonds, the municipal bonds has more risk in credit and default than treasury bonds. There are two types bonds contained in municipal bonds, short-term municipal bonds and long-term municipal bonds according to the maturity. The short-term municipal bonds are issued for fund temporary imbalances between

operating expenditures and receipts. And the latter is issued for finance long-term capital outlays and used them for some social construction, such as building schools, hospitals and public transportations.

Corporate bond market is the emerging financial instrument market in recent years. Usually the corporate bond is issued by companies. With the development of economic, more and more companies need to raise capital for the sustaintial development. The large desire of companies for the capital makes the improvement of corporate bond market (Mishkin, 2006). The companies often issue a certain amount of corporate bonds to expand their business prospects by proming repaying the investors principals and interests at a fixed interest rate on a designated date at the maturity. In comparison with treasury bonds, the corporate bonds can bring the investors higher profit also with higher risk in credit and default. There are lots of companies, which with good credit and excellent profit ability, participants in the corporate bond market. For investors to choose the trust-worthy companies with good credit can reduce credit and default risk to some extent. The corporate bonds are issued for financing by financial companies, banks, industrials and other institutions (Fabozzi, 2014).

2.6 New Tendency of Bond Market

In the long term, the development of bond market has downshifting from a fast pace early last century. The incresing rate and effect of lever has been reduced. And the difference between years and years are obvious. The phenomenon of market disintegration in global bond market has arisen in recent years. What's more, the bond instruments are more and more various with the development of technique and economic. And the investors' ability of withstanding risk has increased a lot.

3 BOND MARKETS IN SELECTED COUNTRIES

With the development of economy, technology, international transaction, bond markets in each countries have different changes in recent years. Bond market and economic interact. Every countries have their own characteristics about bond market. In this part, I will more focus on the general situation of each countries' bond market and its developed history, and short introduction of government bond market.

3.1 Bond Market in China

The Chinese bond market has developed well from recent years. The bond market is an important part in domestic economy system. It works as a vital intermediary between national central bank and other suppliers of funds which can transmit specific currency policy and regulation policy to market participants. After the economic reform in recent years, the improvement has been showed on China bond market.

3.1.1 Structure of China's Bond Market

Since the reform of economic, the structure of China's bond market has improved a lot. The bond market consists of two parts, primary market and secondary market. The main participants of the former are the capital financiers of government, financial institutions and corporates. The main participants of the latter are the investors who hold the bonds and want to trade.

In China, the bond market is comprised with three parts, *the inter-bank bond market, the stock exchange market and the bank counter bond market*. These three market cooperate together can play an important role in its own aspect respectively. The following figure shows how they work.

Chart 3.1 The cooperation between inter-bank bond market, stock exchange market and bank counter bond market

	Inter-bank Bond Market	Stock Exchange Bond Market	Bank Counter Bond Market
Main Participants	Investors In all Institutions	Investors In all institutions Except Banks	Individual Investors and Corporate Investors
Transaction Types	Spot Transaction, Pledge-Style Repo		Spot Transaction
Transaction Ways	One-on-one Asking Price Transaction	Matched By the System	Over-the-counter Bilateral Quotations
Nature of Market	Over-the-counter Transaction	Exchange Transaction	Over-the-counter Transaction
Settle Time	T+0 Or T+1	T+1	T+0
Settle System	Tradefortrade (gross) settlement	Netting Clearance	Tradefortrade (gross) settlement
Varieties of Transaction	Book-entry Treasury Bonds, Financial bonds, Convertible Bonds, The central bank bills	Book-entry Treasury Bonds, Financial bonds, Corporate Bonds, The central bank bills	Book-entry Treasury Bonds, Certificate Treasury Bonds
Developing Extent	Gragually Become Mature		Fledgling Development

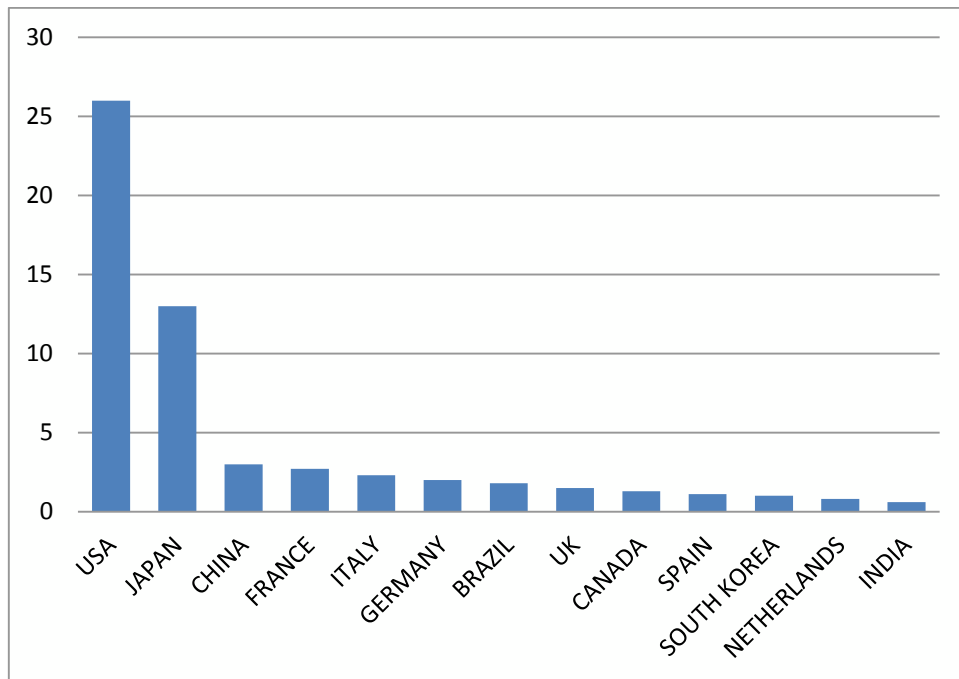
Source: www.csai.cn/zhaiquan/1079918.html, author

As the figure above,the structure of China's bond market consists of three markets, which they cooperate together and have a vital role in their own aspects respectively.

3.1.2 Characteristics of Bond Market in China

There are main three characteristics. The first is that the amount of main investors in bond market increases greatly and types tend to diversified. As it shows in the following chart.

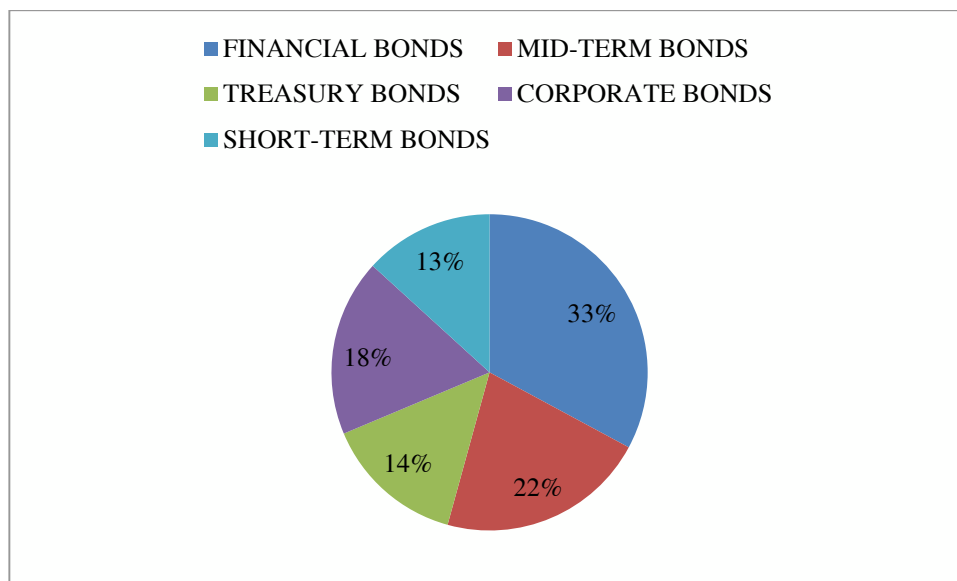
Chart 3.2 Bond Market Daily Transaction Volume of China in 2015



Source: www.chinabond.com, author

As it shows that the transaction volume in China is really huge, which ranks third only after USA and Japan. And the following pie chart shows the proportion of main transaction bonds in China's bond market.

Chart 3.3 The Proportion of Main Transaction Bonds in China's Bond Market in 2014



Source: www.chinabond.com, author

The participants has increased as all financial institutions and non-financial institutions legal person. And *the amount of institution investors and individual investors also increases*. The second is the amount of bonds which can trade has increased a lot and *trade types become more abundant*. And the the amount of Corporate bond tends to develop quickly. And its vulnerability to market fluctuation becomes more and more stable. The third is that the bond market has *become more active and the liquidity has increased*. On the meeting of Securities Regulation Commission, the commission requires that each companies must improve evidently their proportion of corporation bonds financing in direct financing ways and increase assets liquidity to improve their financing structure.

3.1.3 The History of China's Bond Market

The developed history can be divided into four periods. As you can see in the following figure.

Chart 3.4 Development of China's Bond Market

Year:	Period:
1949-1981	Prepare period (developed slowly)
1981-1991	Period of trading over the counter (new bonds increased)
1991-1997	Period of trading in exchange house (gradually standardized)
1997-now	Period of modernization (has a great improvement)

Source: www.chinaonline.com, author

In order to explain it clearly, I will describe each stage from point to point. The first is prepare period (1949-1981). The Central People's Government issued the first government bond in 1950 to solve inflation problem in financial deficit. But there is only bonds without bond market in China because the policy of planned economy and also there is no specific conditions provided for the causing of bond market. The second period is *the period which the bond is traded over the counter* (1981-1991). The corporate bonds has started to issue and the types of government bonds has increased. The issue body is simple-The ministry of Financing in China. The third period is that *the bond is traded in exchange houses* (1991-1997). The bonds transaction tended to marketization. The financial bonds has started been issued by political banks and gradually the electric bond transaction system has come out. The last period is *interbank market transaction* (1997-now). The bond market has gotten complete regulation and laws. Products and services has become more and more. The bond market has become improve and perfect. The Chinese government bond market is one of the biggest bond market in the world. Although the speed of development in bond market is fast and government debt amount is big, the transaction in secondary market is gentle. The bond market system contains interbank market, exchange houses market and counter transaction market. And this market is regulated uniformly by China Securities Depository & Clearing Corporation Limited (CSDCC).

3.1.4 Main Participants in China's Bond Market

The participants in bond market can be divided into two types, the issuers and investors (Fabozzi, 2014).

The issuers in China's bond market are so many, such as central government, local government, commercial banks, non-banking financial institutions, policy banks, state-owned companies, listed companies and so on. And the investors are commercial banks, securities companies, foreign financial institutions, insurance companies and so on.

Besides the important investors and issuers, the bond rating agencies also play an important role in China's bond market. As one of the most important participants in China's bond market, the rating agencies often function in an efficient way. The bond rating agency is the specific institution to rate a bond. In the issues of international bonds, there are some difficulties for investors to know clear in the credit level of issuers. The investors often need some professional opinions on the bonds as a reference and decide whether the bonds worth buying. When one kind of international bonds are prepared to issue, there are several bond rating agencies to rate for it and make sure the issues of it is successful. The bond rating is one of the most important standards to help the investors decide whether they should buy this bond or not. And the bond rating has a direct influence on the interest rate. The professional knowledge, scientific rating standard and convinced evidence of these bond rating agencies can decide whether the bond can be issued or not.

In China, there are so many bond rating agencies because that there are more and more bonds issued in China in recent years. The bond rating agencies can help the investors know more clear in bonds. The bond rating agencies in China, as same as other bond rating agencies of many countries in the world, are *private and independent*. The bond rating agencies are not under the control of the government and are also independent from securities exchange companies and securities companies. Here are some typical bond rating companies in China, such as *China Chengxin International Credit Rating Limited Company*, which is a joint-venture between Fitch Ratings and the International Finance Corporation established in 1992. And also *Shanghai Brilliance Credit Rating and Investors Service Limited Company*

is a famous bond rating agency in China, which usually concentrates on issuer credit rating and the consultation of credit management.

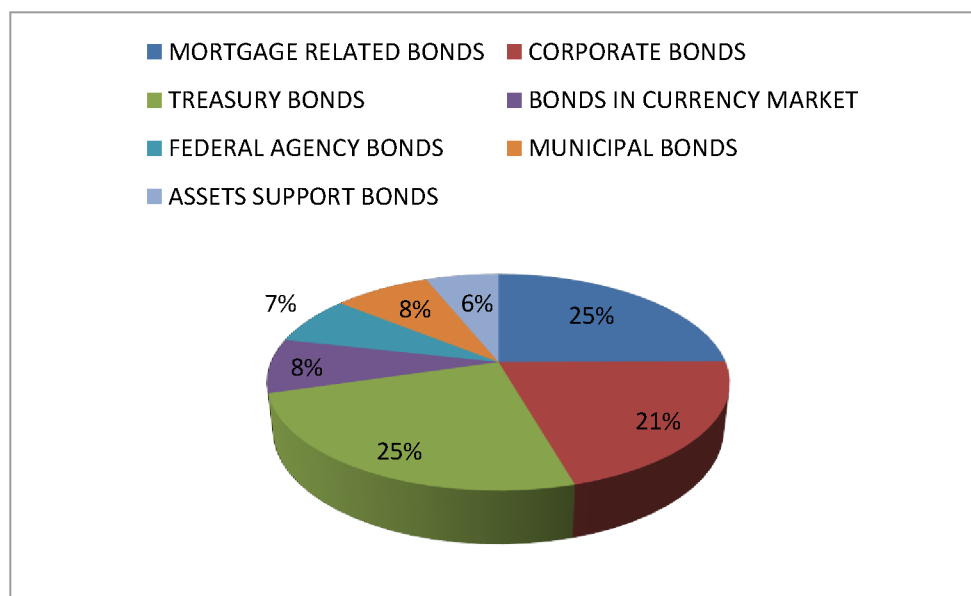
3.2 Bond Market in the USA

As the country which economic has developed a lot, the USA also thinks highly of bond market's development. Now the bond market in the USA has been the largest bond market in the world. It's necessary to clear the bond market system of the USA.

3.2.1 The Structure of the USA Bond Market

The bond market is one of the important part in the USA financial system. There are so many types in the USA bond market. They are treasury bonds, federal agency bonds, municipal bonds, corporate bonds, mortgaged bonds and assets supporting bonds (Fabozzi, 2014). Uptill the end of the year 2013, the total bonds transaction volume was 35.8 trillions. The proportion of each kind of bonds in the USA is showed in the following chart.

Chart 3.5 The Proportion of the USA Bond Market in 2013 (%)



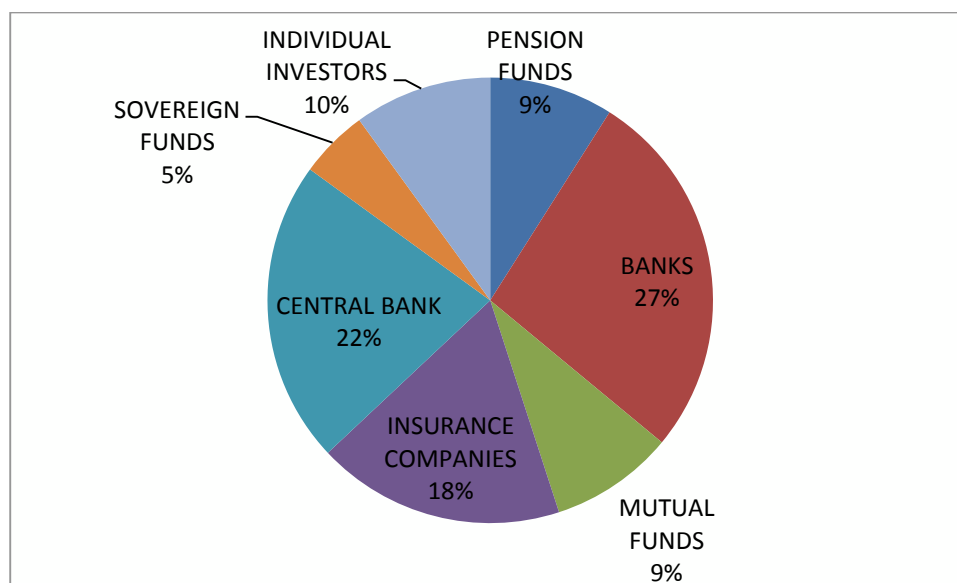
Source: <http://www.sifma.org/research/statistics.aspx>, author

And it is clear that the treasury bonds and mortgage related bonds take up half of the bonds transaction volume in the USA bond market.

In the past ten years, the scale of treasury bonds increased most fast. It was almost 2.8 times than the scale in 2005. The mortgage bonds were the motive power of the USA bond market expansion during the period of 1996 to 2007. The developing speed tended to slow down because of the burst of financial crisis.

Seeing from the bondholders, 90 percentages of bondholders are *institutional investors*. Only 10 percents of bondholders are *individual investors*. As the following pie chart shows, the bondsholding volume of banks is most.

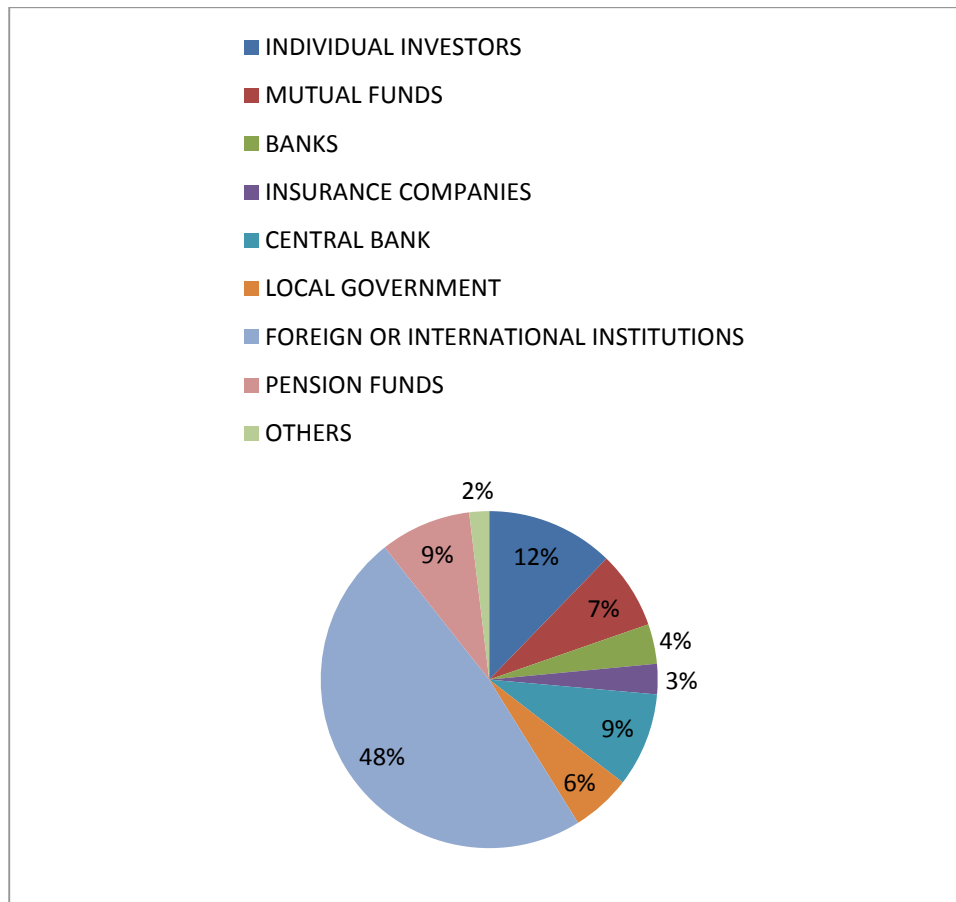
Chart 3.6 The proportion of bondholders in the USA Bond Market in 2013 (%)



Source: <http://www.sifma.org/research/statistics.aspx>, author

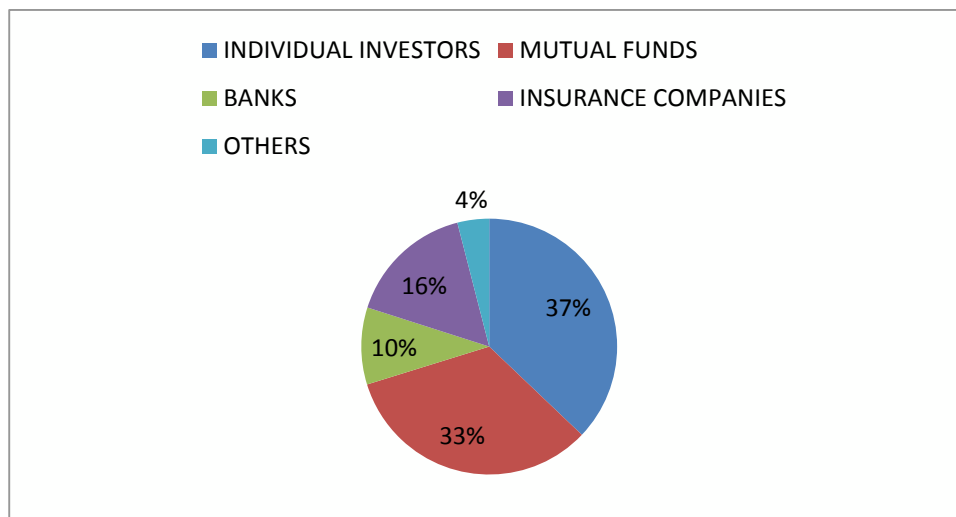
Compared with the proportion of bondholders in total bonds, the bondholders of federal agency bonds and municipal bonds have different situation. Seeing these two following pie charts, the main bondholders of federal agency bonds are foreign or international institutions, which occupied 48%, almost half of bondholders total volume. And the bondholders of municipal bonds are individual investors, was 37%.

Chart 3.7 The Proportion of Bondholders in the USA Federal Agency Bonds in 2013 (%)



Sources: <http://www.sifma.org/research/statistics.aspx>, author

Chart 3.8 The Proportion of Bondholders in the USA Municipal Bonds in 2013



Source: <http://www.sifma.org/research/statistics.aspx>, author

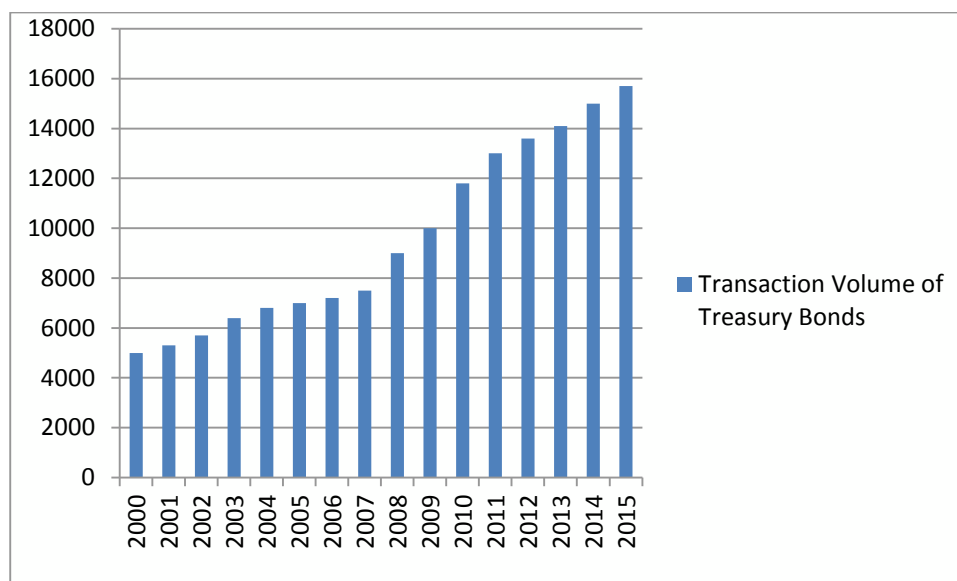
We can get information that the different types of bonds in the USA bond market have really different bondholders.

3.2.2 The Characteristics of the USA Bond Market

There are five characteristics in the USA bond market. The first one is the *issues of federal government bonds has increased a lot*. And the *municipal-Bonds has little increased and the cost of carry has increased a lot*. The third is that *the issues of corporate bond tend to increase since 2009*. The maturity comes to the peak. After the subprime crisis, the suspensory power from federal government on mortgage-backed security has strengthen a lot. And the last is that the influence from international capital on the USA bond market has enhanced (Savnders 2012).

As we can get some information of the chart 3.8 which is showed in the following

Chart 3.9 The Volume of The Treasury Bonds changes from 2000 to 2015



Source: <http://www.sifma.org/research/statistics.aspx>

Since 2000, the transaction volume of the USA treasury bonds keeps increasing, in 2015 it reached at 1570000 millions totally. It is obvious that with the time going by, the tend of transaction volume is increasing sharply, which almost double than the initial period in 2000.

3.2.3 History of the USA Bond Market

The American bond market is a force to be reckoned with in world bond market. It developed early and has become the most powerful after great-leap-forward development. The history can be divided into five period. To explain clearly, here is a chart.

Chart 3.9 The History of the USA Bond Market

Year	Period
Before 1850	Preparing industrialization(regulated and issued by government)
1850-1929	Developed slowly(government bonds decreased)
1929-1960	Developed quickly(bonds scale increased stably)
1970-2008	Innovation of bond market(regulation and increased speed got more and more steady)
2008-now	Stable development(after financial crisis,the development of bond market is stable)

Source: <http://www.sifma.org/research/statistics.aspx>, author

The first is *war of independence* (mid nineteenth century) . It issued treasure bills in preparing industrialization stage. The states and local government has become the main body to issue government bonds and the bond market gradually set up. The second period is *developing slowly* bond market (mid nineteenth century-big crisis in 1929) . The proportion of bond market in capital market gradually decreased and proportion of corporate bonds became stable. The banks became the main investors in this market. The third period is *developing fast* (big crisis in 1929-1960s). The government bonds has increased a great amount and bonds issuing scale developed sharply. The banks were still the main investors in market. The next period is *great development of financial innovation* (1970s-2008) . In this stage, government bonds

increased but scale decreased. Corporate bonds and structural bonds have become more and more popular. The last period is that *whole scale contained but preferences of bonds decreased* (2008 financial crisis-now) . The bonds scale and transaction amount still increase. The investment proportion of assets securitization products and financial innovation products decreases. In other words, the investment preference decreases. The two regulating departments of government bond market in American are Federal Ministry of Finance and Central Bank of American. The issue of government bond market is transparent and the issue time is fixed (Fabozzi, 2014). The aim of government bond market is to provide stable financing which has lower costs. The important character is that the government bond market is in a small proportion in American capital market. And the main participants, or government bond holders are usually foreign and international investors and institutions.

3.2.4 Main Participants in the USA Bond Market

According to the different needs for the both side of the transactions, the main participants can be divided into two parts, investors and issuers.

In the USA bond market, there are many bond types in it, such as treasury bonds which are issued by central government, municipal bonds which are issued by states or local government and many other bonds. Seeing from the types of bonds in the USA, the issuers could be central government, federal government institutions, states or local government, and other many institutions which have the power to issue the bond market. And the investors of the USA bond market can be divided into two parts, the individual investors and institution investors. The individual investors are the independent investors who want to apply their capital to get a profit. The institution investors, usually are represented as commercial banks, insurance companies, foreign or international institutions and non-banking financial institutions. These investors buy bonds and require for a profit.

And what is also important is the bond rating agencies. The bond rating agencies in the USA usually have some analysis on the situation of the issuers' operation and fiscal phenomenon, to decide the result of the purpose of raised capital, the method of raising capital, the risk conditions, the maturity and so on. There are two powerful

bond rating agencies in the USA, *the Standard & Poor's rating agency and the Moody's investors service company*. These two bond rating agencies are of most trust-worthy rating agencies in the world. Both of them are independent from government and securities companies. These two rating agencies have a large service range, compared with other bond rating agencies. They rate a bond or the issuer on municipal bonds, corporate bonds and foreign bonds. The analysis has strong authority because they have lots of specific documents, advanced technology and rich experience in rating. The rates ranked from high to low by the Standard & Poor's rating agency can be divided into AAA, AA, A, BBB, BB, B, CCC, CC, C and D. And the rating results of the Moody's investors service company are also states on letters. From the rating of high to low, the rating system can be showed in the letter of Aaa, Aa, A, Baa, Ba, B, Caa, Ca, C. There are little difference between the rating methods in both the Standard & Poor's rating agency and the Moody's investors service company. The bonds of the former four ratings have higher credit level and lower default risk. The bonds after fifth rating is speculative, which have higher risk in both credit and default.

3.3 Bond Market in Germany

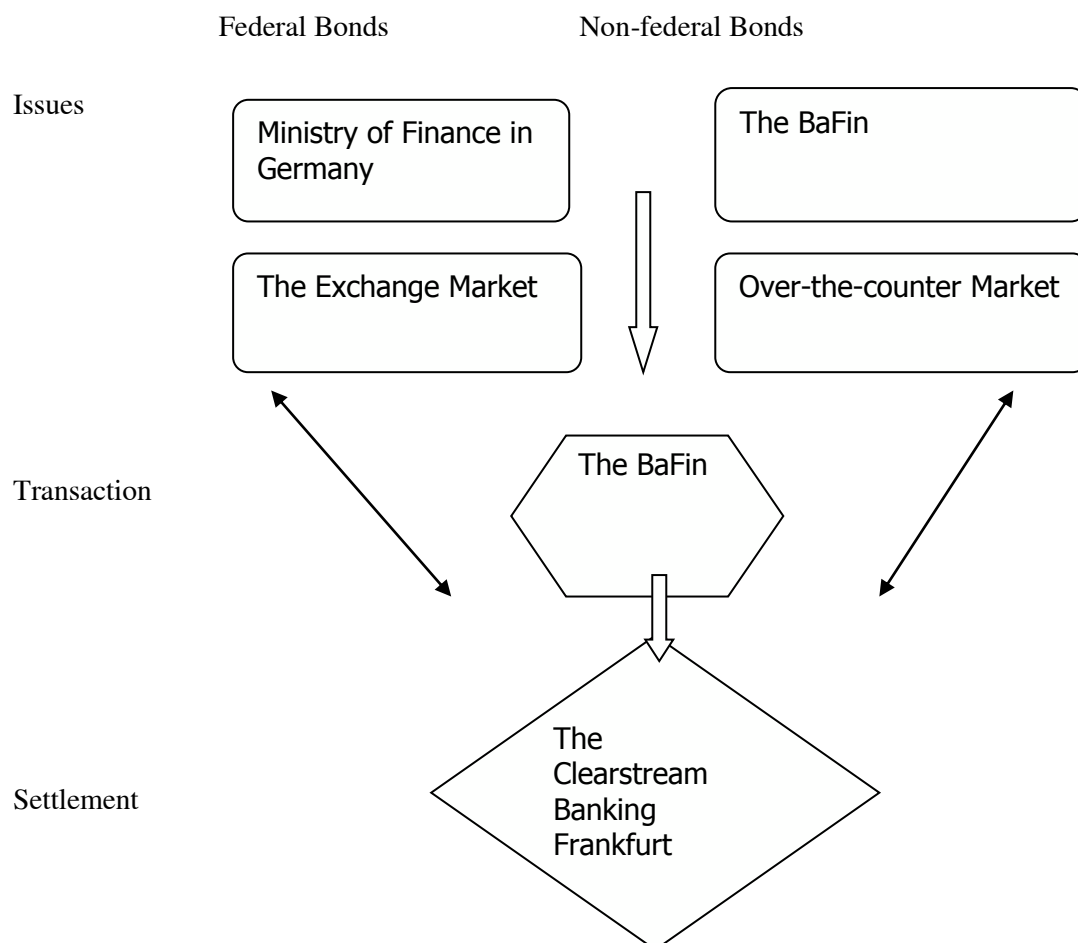
Since 1990, the bond market in Germany has developed well. It reflects the developing level of Euro bond market. Germany, as the economically advanced country, has not overlooked power in Europe. The bond market ranks third in the world which only after USA and Japan. The financial bonds are always the main subjects in the financial market. In other words, the bond market has become more and more important in recent years.

3.3.1 The Structure of Bond Market in Germany

As the one of the most vital economic entity, Germany, the prosperous economy country in Europe, has the significant influence on other countries in the world. It reflects not only on the huge transaction volume of the bonds but also the efficient structure of bond market in Germany.

The Ministry of Finance is responsible for the issues of federal bonds. The BaFin, which represents as the regulating authority in Germany, is responsible for the issues of other bonds. These bonds can be traded in both exchange market and over-the-counter market. And also *the BaFin*, takes the responsible for regulating the issues of Germany bonds, has unique function of adjustment and regulation on the structure of Germany bond market. According to the structure of Germany bond market and the tradition of Germany bonds transaction, there are eight main bond exchanges in Germany. All of them play an important role in Germany bond market structure. Compared with other exchanges in Germany, the Frankfurt Exchange has the most bonds transaction volume and listing amount in total. And the settlement of bonds is under the responsibility of Clearstream Banking Frankfurt. As we can have clear information for the structure of Germany bond market from the flow chart.

Chart 3.10 The Process of Germany Bond Market



Source: <http://www.docin.com/p-116661020.html>, author

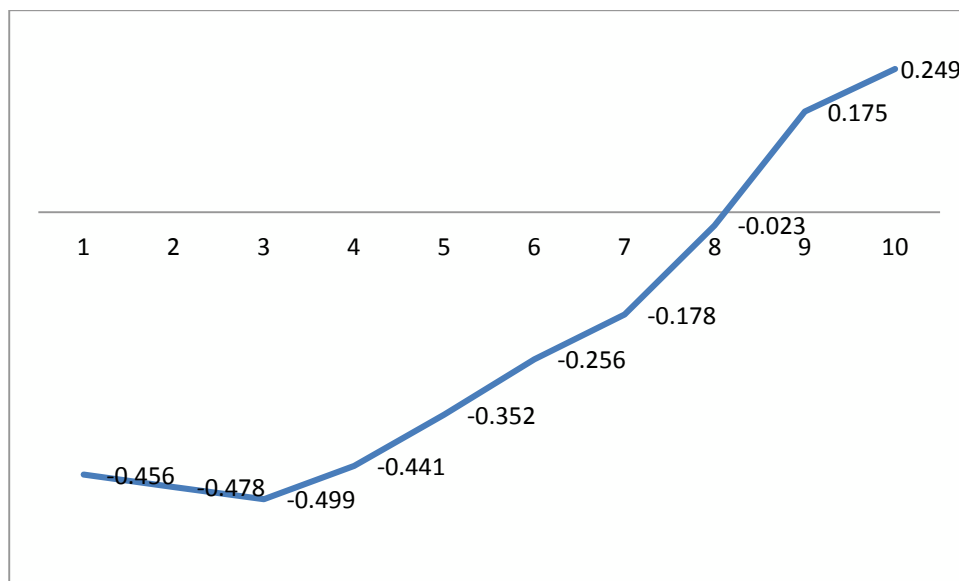
To sum up, the structure in Germany is comprised of two main markets, the stock exchange market and the over-the-counter market. And the main regulating institution is The BaFin, which is the most convincing regulating authority in Germany. It is the concise but efficient structure that makes the quick development of the bond market in Germany.

3.3.2 The Characteristics of Germany's Bond Market

Because of 2008 American subprime crisis and European debt crisis, the bond market in Germany suffered a chain of economic harm. But Germany finally gets through the crisis, we must know about the reasons. The Germany bond market is one of the most important bond market not only in Europe but also in the world. The quick development has a tight relationship with its bond market.

One characteristic is that the scale of financial bonds has *deeply increased and it takes the leadership in bond market*. And the second is that *corporate bonds takes a small proportion* in bond market because of complex issuing procedures, high cost and the developed indirect financing so that the corporations get financing easily. And the financial system also highly develops at the same time. Now the German bond market ranks third in the world, after the USA and Japan. The another important characteristic is that *banks takes an significant role in bond market*. It's related to Germany's financial system which the almighty banks has a leading role. The banks have power to issue bonds because the almighty banks can provide all kinds of financial services without limitation of financial service division. There is no doubt that the characters of bonds market has the vital function of getting over the crisis. Another important characteristic is that the yield rate of Germany bonds with different terms has below over the 0, but what is the good thing is that the yield rate gradually increased and even the yield rate increases over 0. As the chart shows in the following.

Chart 3.12 The Changes of Yield Rate in Germany in 2014



Source: <http://en.boerse-frankfurt.de/bonds/yieldcurves>, author

There is no doubt that we can draw the conclusion that the yield rate of Germany bonds is very low but the good thing is that it is gradually increasing and finally over 0.

3.3.3 History of Germany's Bond Market

Germany is an industrialized country from ancient times to the present so that its economy developed early. In other words, Germany has a long and old history of bond market.

The developing history is long and can be divided into periods. The first is 1850s-1932. *The tide of industrialization* made the bond market related tightly with bank industry to develop a special bond system. The second period is 1932-1957. *The German economy breakdown* made the bond market run into a mass. It was the most turmoil period in bond system. The third period is 1957-1967. The *new socialist market economy* which proposals balance deficit made the scale and amount of bond market decreased. The next period is 1967-1998. This period *contained the former's policy*. The development of bond market was stable. The last period is 1998-now. After 1990s, the German bond market developed well and main types are government bonds, corporate bonds and financial bonds. And financial bonds are the main body and banks are main issuers. In recent years, the financial bonds decreases and

corporate bonds tend to increase. The government bond market has become more and more important because the proportion of debt in German GDP gradually improves. The stable economy and high credit level of government make the German government bond market becomes one of the most important, most demand and most liquid bond markets in the world. The characteristics are from German government bond market structure, government holders and regulation. The first is that *the government bonds has second proportion in structure*, After 2008 financial crisis, the scale and amount of government bonds has improved. The second is that the *main holders in government market are individuals and foreign investors*. Because the high interest and the effect of recent European debt crisis, more and more foreign investors tend to German government bonds. The last is that the government bond market is *regulated by Bundesministerium der Finanzen, Deutsche Bundesbank and Federal German Proxy Companies*. The three institutions cooperate with each other and each performs its own functions to make the government bond market work efficient and legal. Here is a chart shows the proceeding of the bond market's development in Germany.

Chart 3.13 The Process of Germany Bond Market Development

Year	Period
1850-1932	Bond marekt developed with bank industry
1932-1957	Period of mess
1957-1967	Scale of bond marke decreased because of new socialist marekt economy
1967-1998	Sustained development
1998-now	Stable bond market system comes into being

Source: www.china-historysearching.com, author

3.3.4 Main Participants in Germany's Bond Market

Germany's bond market, which is the one of the significant bond transaction market not only in Europe but also in the world. Therer are so many competitive

participants in Germany's bond market. According to structure of Germany bond market I showed in last part, the main issuers of Germany bond market are the Ministry of Finance in Germany and The BaFin. And also the local government, government authorized institutions, financial institutions and other institutions are the participants in Germany's bond market. As for the investors, as same as many other countries, the investors of Germany's bond market are commercial banks, securities companies, insurance companies, non-banking financial institutions and non-financing institutions as well. The issuers and investors, of which consists the main participants, work both important in Germany's bond market. As for the bond rating agencies in Germany, there are also some domestic bond rating agencies. But in order to show a more direct and understanding description about the bonds or issuers rated in Germany, the standard is usually followed by the Standard&Poor's rating agency and the Moody's investors service company in USA. Some of the bond rating agencies in Germany also can provide some advice but more and more investors are more likely to take the opinion of the Standard&Poor's rating agency and the Moody's investors service company for a reference.

The regulating institutions, which play an important role in Germany bond market, are also the main participants in Germany. The most important regulating institution is *The BAFin*, which is combined by the three institutions of banking regulation, insurance regulation and, securities and futures regulation. One of the function of The BAFin is to *make the Germany bond market work efficiently*. Also The BAFin is responsible for protect the profit of investors and improve the justice and publicness of Germany's bond market. The BAFin has a division for banking, insurance and securities. There are three departments to take the responsibilities of these three parts. The department of securities regulation is located on Frankfurt, where is the central of central bank, securities and futures transaction in Europe. The BAFin can have a strict regulation on the trade of bonds. The regulating laws or standards can improves the efficient operation in Germany bond market. The regulating institutions, is obvious to be an important part of Germany bond market as well.

3.4 Bond Market in Brazil

Brazil has developed quickly as a developing country. In recent years, its political and economic has a great improvement. In developing countries, Brazil can be ranked at the top of the list. With the national government has generated economic strategies, the bond market also got an obvious development. The government issues bonds to finance for some political development. With the quick development of economic in Brazil, the corporates issue bonds to seek the capital for futher development of the company. And the investors want to get a profit from their investments. All of the reasons above provide the motive power for the development of the Brazil's bond market.

3.4.1 The Structure of Brazil's Bond Market

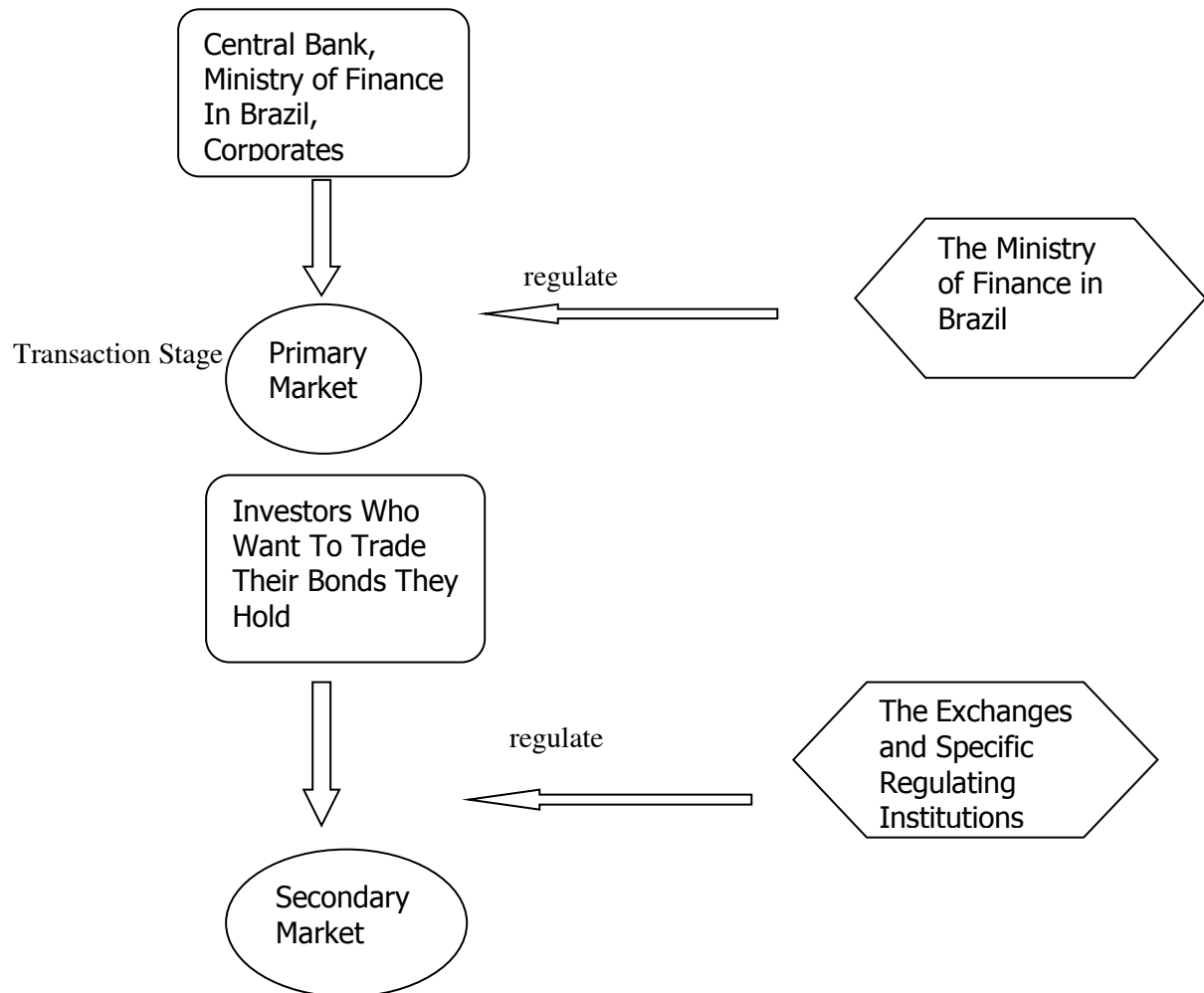
In recent years, the economic development shows a great influence on Brazil's social improvement. It is necessary to learn more about the improved bond structure in Brazil.

There are two parts in Brazil's bond structure, the primary market and secondary market. The primary market is for issuers to issue new bonds. The main issuers are *the central bank, the Ministry of Finance in Brazil, local government and corporates*. The secodary market is for the investors to trade the bonds they hold. The investors are usually commercial banks, insurance banks and other financial institutions. Also there are some regulating institutions to cooperate with the issuers and investors to guide the Brazil's bond maket into a more efficient management.

Here is a process of the structure of Brazil's bond market.

Chart 3.13 The Structure of Brazil's Bond Market

Issue Stage



Sources: www.chinabond.com, author

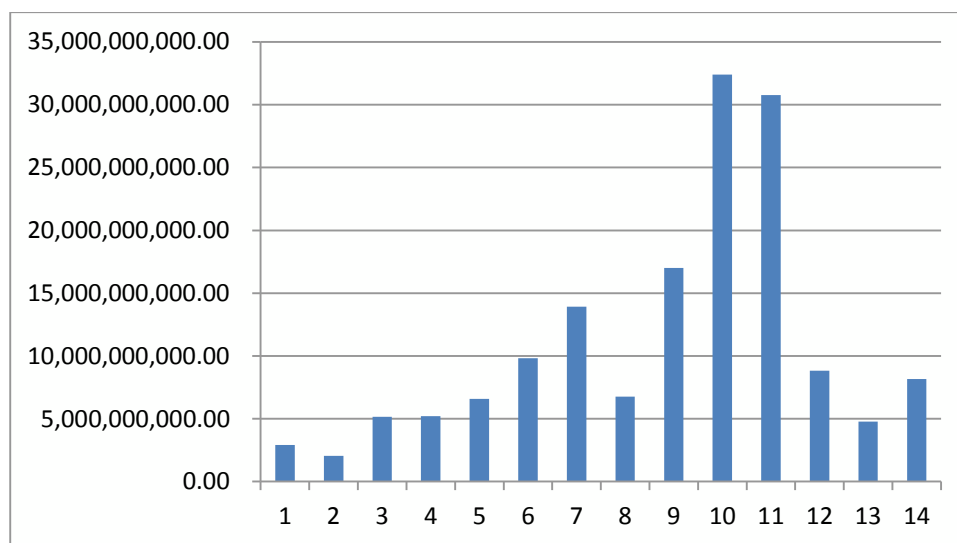
3.4.2 Characteristics of Brazil's Bond Market

As the new emerging market, the economic development of Brazil is obviously large. The achievement can be reflected on the bond market. The main characteristic is that *the proportion of foreign investors is big* in government bond market. It has been more than 10% recent years. The next characteristic is that the proportion of British bond market in Gross Domestic Product (GDP) is small. The most mature products are government bonds, interest rate futures and foreign exchange derivatives of big debt financing to support huge deficit. And the next is that the bond market *develops quickly and well but it is still on the weak position*. In recent years, with the needs of financing sharply increases, the huge development of British economy makes

many enterprises, banks and investors enter the capital market and makes domestic bond market promote a lot. The last important character is that *the ability of British bond market to raise big amount financing is weak*. Many corporate bonds don't deal during a long time so that many holders don't want to hold such bonds. It makes the market lose an important liquidity resource.

Here is a chart shows the Brazil's bond market transaction volume. From this figure we can get the information about the bond transaction volume in Brazil directly.

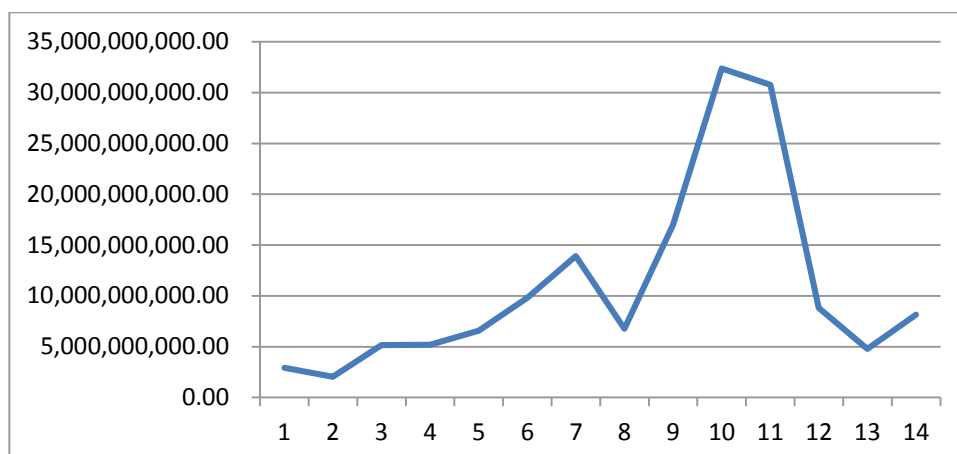
Chart 3.15 The Bond Transaction Volume in Brazil From 2001 to 2014



Source: www.worldbank.org, author

It is very clear to see that the bond transaction volume in Brazil is really a great number. The bond transaction volume reached a peak at 2010, which was 32384268000 totally in USD.

Chart 3.16 The Changes of Brazil's Bond transaction Volume From 2001 to 2014



Source: www.worldbank.org, author

From this chart, we can easily get the conclusion that the bond transaction volume is very huge. And the tend of bond transaction volume is an erratic fluctuation.

3.4.3 History of Brazil's Bond Market

The economy of Brazil has developed quickly these years, as a developing country. The history of bond market development can be divided into three periods.

Here is a chart to state the history in each period.

Chart 3.17 The Process of Bond Market Development in Brazil

Year	Period
1970-1990	Economically underdeveloped and lack the political and economic conditions of developing bond market
1990-2004	Developed a lot because a series of economic developing strategies has formulated
2004-now	Stable improvement with the formation of standardized bond market system

Source: www.chinahistory-researching.com

The first is 1970s-1990s. In this stage, Brazil economy didn't have obvious development because Brazil was developed far behind other countries in the world. Its economy was very closed with a high inflation rate. The bond market hasn't come out. The second period is 1990s-2004. During this period, the economic in Brazil has improved a lot. The against inflation policy and a series of regulating laws helped the bond market get the unprecedented development. The basic bond market system which include regulation, issue and operation has set up. The last period is 2004-now. The bond market gradually develops very well in British economic system. It has set up a improved system that issues government bonds, corporate bonds and other financial bonds. And also the private sector bond market improves and gradually in an important position. The government bond market ranked eighth in the world in 2008. The issue method is competitiveness tender issue. And the federal government bond is issued systematically by Brazil Ministry of Finance. In general, the scale of Brazil government bond market and amount of federal government bonds increase a lot. The government bond market gradually takes an important role in British economy system.

3.4.4 Main Participants in Brazil's Bond Market

The bond market in Brazil is quite an emerging market in the world. There are two main parts in its participants, the issuers and the investors. The main issuers are federal government in Brazil, state government, and corporates. *The federal government has the absolutely authority to issue the bonds.* And usually the federal government can issue lots of bonds to institutional investors and individual investors. As for the investors, they could be divided into institutional investors, such as commercial banks, political banks and foreign or international institutions, and individual investors who want to seek for a profit from their investments. Besides the issuers and investors, the bond rating agencies are also one important part in Brazil. The bond rating agencies in Brazil are fewer than China, USA and Germany because many bond rating agencies in Brazil just develops slowly. When an issuer wants to issue a new kind of bonds, the analysis of its operating situation and profit ability are given by the authorized bond rating agencies in USA, which usually are the Standard & Poor's rating agency and the Moody's investors service company. And another important participants are regulating

institutions. The most important regulating institution in Brazil is the Ministry of Finance in Brazil. The Ministry of Finance in Brazil makes a professional developing strategy at the beginning of the year. The regulating strategy, which regulates the issues volume, issuing standards, transaction laws and many other regulations relative with the bonds issues and transactions in Brazil.

To sum up, the issuers, investors and other special institutions such as rating agencies and regulating institutions have their own impact on the Brazil's bond market. They must cooperate together to function the bond market works efficiently.

4 COMPARISON OF GOVERNMENT BONDS

This is the most important part in the thesis. In last three parts, It is introduced the bond and the bond markets in China, the USA, Germany and Brazil. The reasons to choose the four countries is that they are typical bond market in the world. China, as the economic-developing country in Asia, has a great development in bond market in recent years. The USA, the most developed market in the global market, has strong power in economic and technology. Focus on the bond market in the USA could be an useful experience for country's development. As for Germany, a stable economic market in Europe, which recovered from the financial crisis quickly, has strong enough economic support to get through the crisis. So it is valuable to research the bond market in Germany. And the Brazil is also a representative country in Latin America. It is an emerging market that has upbeat development in recent years.

What's more, the comparison is on the difference of government bond market in the four countries, such as structures, characteristics, main types of government bonds and other important factors in government bond market.

4.1 Government Bond Market in Selected Countries

The government bond market is a very important part of Chinese bond system. In China, the government bond was reissued in 1981. The government bond is used to offset fiscal deficit, raise capital for construction of social services and adjust national or local economic. Now the Chinese government bond has become an important method for government to raise capital and expand public expenditures. With the development of financial market, the government bond gradually increases the functions of financial products and credit instrument. And it has developed into an indispensable instrument for central government to implement macroscopic readjustment and control policy.

The bond market in the USA has been one of the most successful bond market in the world. Its government bond market also has a long developing history. Government bonds have become an important method for central government and local government to finance. These government bonds are usually issued by Treasury

Department of United States. Here is a chart about the countries bond market structure.

Chart 4.1 Scale of Governemnt Bonds In Each China,the USA,Germany And Brazil in 2014 Showed in Dollars

COUNTRY	GOVERNMENT BOND TRANSACTION VOLUME	PROPORTION IN BOND MARKET	GOVERNMENT BOND SCALE	GOVERNMENT BOND PROPORTION
CHINA	1368.00	2.6%	922.71	3.7%
THE USA	23380.4	44.2%	6351.65	25.4%
GERMANY	2318.23	4.4%	1269.31	5.1%
BRAZIL	839.53	1.6%	625.71	2.5%
JAPAN	8144.76	15.4%	6580.94	26.3%
ITALY	2792.65	5.3%	1654.79	6.6%

Source: www.worldbank.org, author

As we can see from chart 4.1, which showed in 2014, the USA ranked first in the world. Although Janpan just ranked behind the USA, the government bond market scale was only one-third of the USA government bond market.As for Itaty, which ranked third according to this data,was nearly one in ten of the USA. The USA government bond market scale is absolutely further than Janpan and Italy which respectively ranked second and third. So we can draw the conclusion that the USA is dominant in the world government bond market.

For a long time, Germany bond market has been one of the most important and reliable bond market in the world. Thanks for the stable economic development, Germany bond market is still attractive between investors. In recent years,the proportion of government bonds has increased a lot. It came into 49.61% till now. Since 1990s, the Bundesbank strictly control the currency supply amount to prevent inflation. It makes the bonds interest rate amid high and attracts a lot of foreign

investors. All the government bonds in Germany are book-entry bonds. The government bonds contain federal government bonds, federal agency bonds and local government bonds. The federal government bonds take a biggest proportion in government bond market.

As the developing country, Brazil has become a rising star in the world. Brazil is named as BRICs with Russia, India and China. Many years ago, Brazil is an undeveloped country in Latin America. But now Brazil has been a new economic market in the world. With the strategy published by Central Bank of Brazil, the economic in Brazil has developed well. It doesn't only reflect on the bank, insurance and foreign exchange but also reflect on the bond market. Seeing the recent development in Brazil bond market history, the bond market has set up a series of policy to make the bonds market improve firmly. And more and more institution investors and individual investors seek to purchase Brazil bonds which includes corporate bonds, financial bonds and government bonds. The Brazil government has made a series of policy to improve the government bonds. With the strong power of economic in Brazil government, many investors tend to purchase a lot of government bonds to hedging. In general, the government bonds market has become a new emerging market to attract more and more home country or foreign investors.

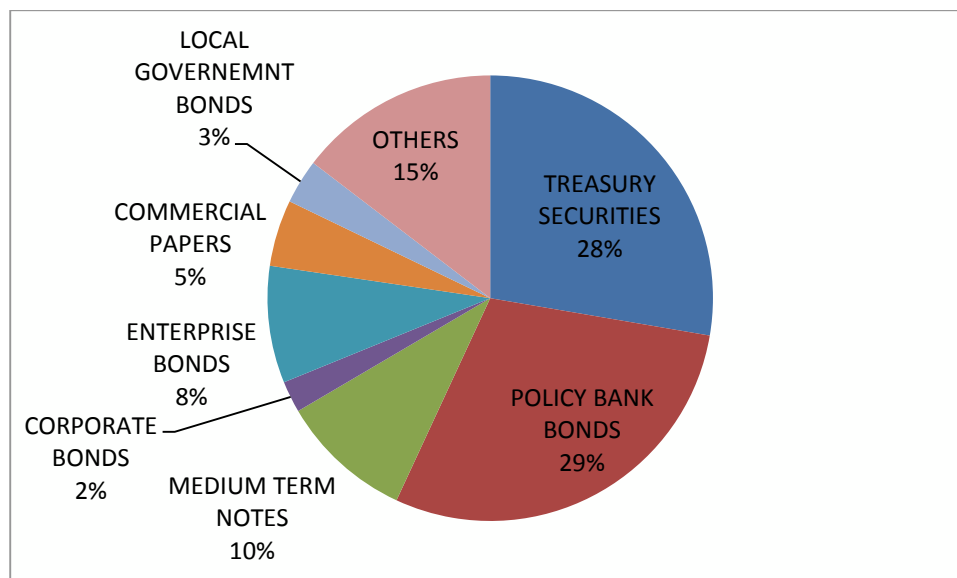
4.1.1 Structure of The Government Bond Market in Selected Countries

Government bond markets in each country are as important as other financial market. The government bond market, which includes treasury bond market, municipal bond market and government agency bond market. The three parts, or two parts former, function the government bond market efficiently.

In China, the structure of government bond market *becomes more and more rational in recent years*. The government bond market could be divided into two main parts, the treasury securities market, and municipal bond market. The treasury securities market is the market for the transaction of government loans, ordinary government loans and specific bonds. The issuers of this bond are the central government. The treasury securities are issued for raising money for Chinese key construction projects and to make up financial deficit budget. The municipal bond market is a kind of emerging market in China but it has a great development because

of the new strategy formulated by the Ministry of Finance in China. This kind of bond is issued by local government in China to raise money for local transportation, telecommunication, residence, education and medical treatment. And the main participants in China's government bond market are so many. As for the issuers, they are the Ministry of Finance in China and local government. They usually issue the government bonds to raise money for social constructions. And the investors in China's government bond market are individual investors and institutional investors such as commercial banks and financial institutions. And also the other important participants are relating institutions, such as China Securities Regulatory Commission and mutual supervision institutions, and bond rating agencies, such as China Lianhe Credit Rating Limited Company and Dagong Global Credit Rating Limited Company. All of them play an important role in China's government bond market. As we can see from the following pie chart, it shows the types and composition of China's bond market.

Chart 4.2 The Types and Composition of China's Bond Market (%)



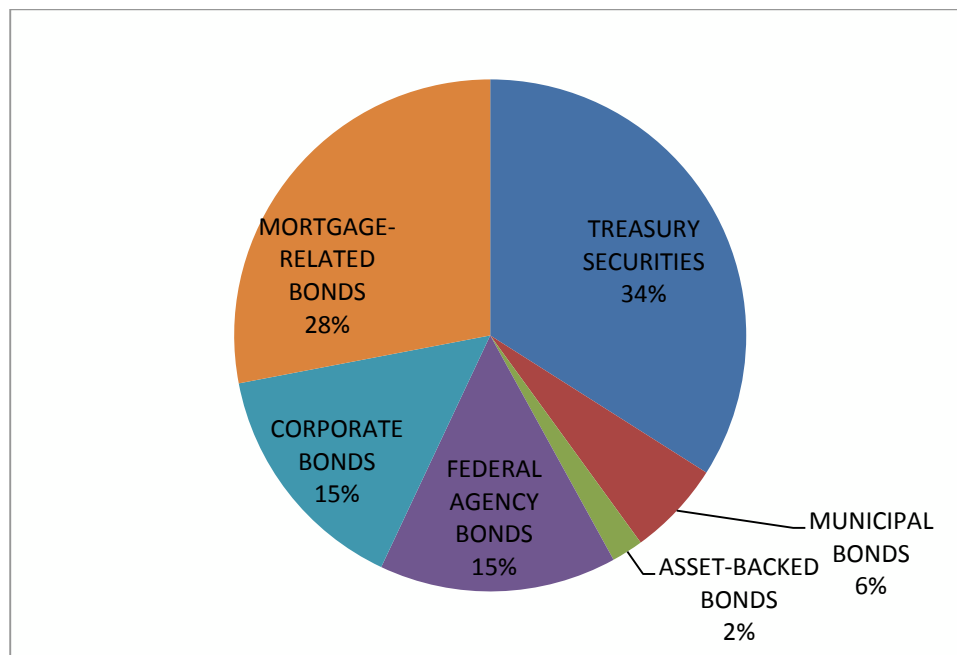
Source: www.chinabond.com

This pie chart shows that the total volume of treasury securities and local government bonds has the most occupation in the China's bond transaction.

In the structure of the USA's government bond market, there are three parts in it, treasury bond market, municipal bond market and government agency bond market

(Fabozzi, 2014). The treasury bond market is the market for the Ministry of Finance in the USA to issue the marketable the USA government debt with fixed interests. The main function of treasury securities in the USA is to remedy fiscal payments disequilibrium. The kind of bonds can be divided into many types according to the term. The municipal bond market is the market for the local government or state government to issue bonds. The municipal bond can provide capital for local government operations, social service and infrastructures. The last one, government agency bond market, is a market for the transaction of bonds which are issued by government authorized institutions. It is an emerging part in the USA's government market. The issuers of this bond are Federal National Mortgage Association, Federal Home Loan Mortgage Corporation and so on. The aim for issuing this bond is to provide financial assistance for social service projects. The participants in the USA's government market are issuers, investors and other important institutions. As the pie chart showing, the proportion of the USA government bond is higher than other bonds.

Chart 4.3 The Proportion of Different Types in The USA Bond Market (%)



Source: <http://www.sifma.org/research/statistics.aspx>, author

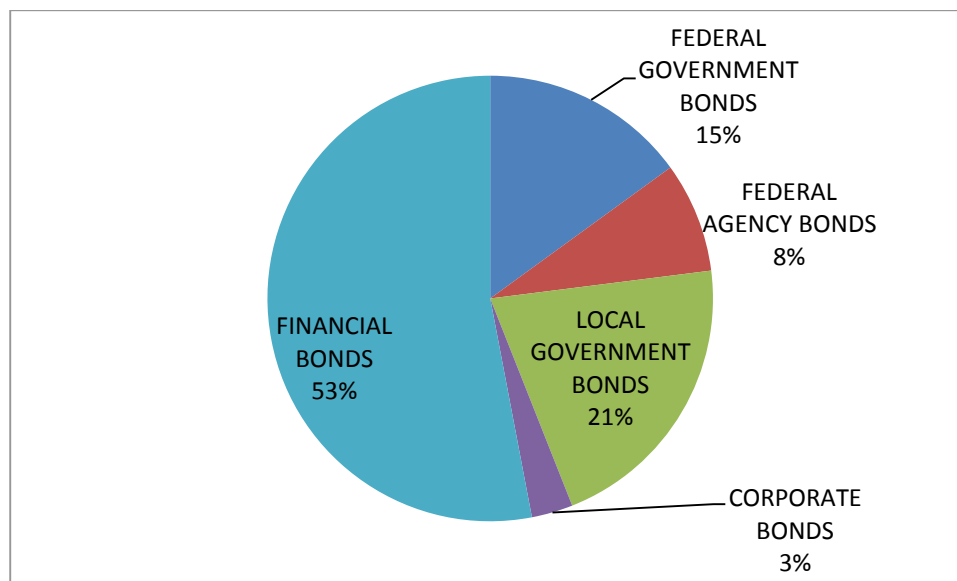
We can see directly from the chart that total government bond transaction volume is 55% which is added by 6% municipal bonds, 34% treasury securities and 15% ral

agency bonds. The total volume of government bonds in the USA is double more than other bonds in bond market.

The government bond market in Germany is the third biggest bond market in the world. The structure of Germany's government bond is typical in Europe. The government bond market in Germany consists of three parts, the federal government bond market, the federal agency bond market and the local government bond market, which is similar with the government bond market structure in the USA. The federal government market is a place for the German Federal Ministry of Finance to issue and for the Federal Central Bank of Germany to provide scientific method of issuing. The main function of the federal government bond is to support public service, cover financial deficit and financing. And the types of Germany federal government bonds are so many, which can be divided by the maturity. The federal agency bond market is established to issue government bonds by some federal government authorized institutions, such as federal government authorized railway companies, post companies, schools, which are usually the social service-related institutions. The aim of issuing this is to raise the money for social service and social constructions. The local government bond market is the market for states to issue bonds for financing capital for construction of public use. Only the states which have strong enough repaying ability can issue the local government bonds. The main participants in Germany's government bond market are issuers and investors. The issuers include central bank, state government, federal government authorized institutions. And the investors are individual investors and institutional investors which include commercial banks and many other financial institutions. What's more, the regulating institutions, like Bundestag Bank, and the rating agencies are also very important to the Germany's government bond market.

And we can have a direct view on the following chart. It is about the proportion of bonds in Germany's bond market.

Chart 4.4 The Proportion of Government Bond in Germany's Bond Market (%)

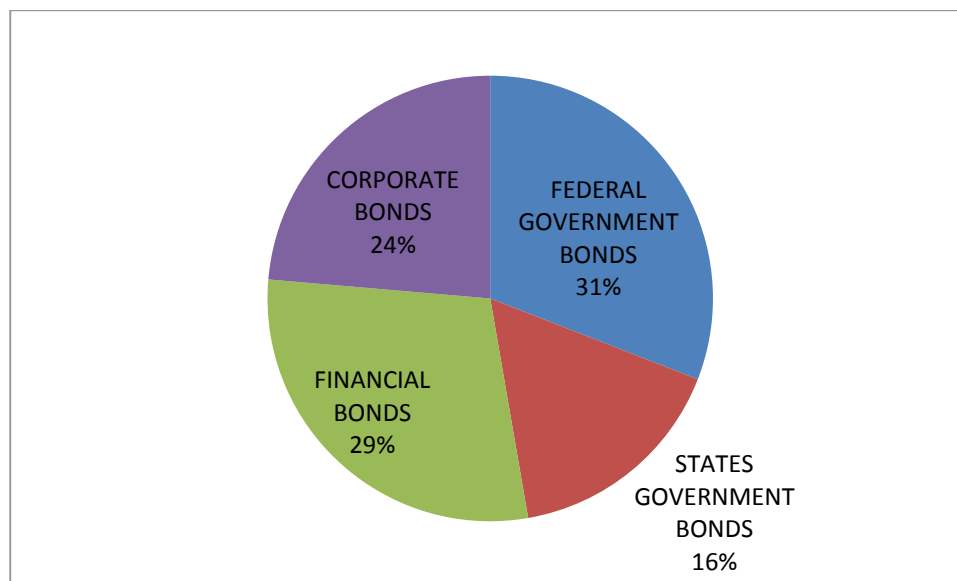


Source: http://huangongdi.blog.hexun.com/57287415_d.html,author

It is very clear that the total transaction volume of government bonds is nearly half of the bond market occupied. But in comparison with China and USA, the federal government bonds volume is less than local government bonds.

The bond market in Brazil is quite an important part in domestic economic system. And the government bond market, shows more and more significant situation in Brazil's economic. First we must get enough information on Brazil's government bond market structure. There are two main parts in Brazil's government bond market, the federal government bond market and states government bond market. The federal government is for Brazil central government to issue government bonds. There are two aims to issue this kind of government bonds, raising money and building up an efficient interest rate curve by using clear basic interest rate. The states government bond market is a place for those states which have strong enough repaying power to issue government bonds to investors. The states government can get the capital from issues and put the capital into the use of public service. The main participants are issuers (federal government, states government), investors (individual investors and institutional investors) and also some special institutions (bond rating government and regulating institutions). All of them have unique role in their own parts. Here is a pie chart that shows the proportion of government bond transaction volume in Brazil's bond market.

Chart 4.5 The Proportion of Government Bond in Brazil's Bond Market



Source: www.worldbank.org, author

What the pie chart shows is that the government bond volume, which adds federal government bonds and states government bonds, is almost half of the total bond transaction volume.

4.2 The Comparison of Government Structure Between China, the USA, Germany and Brazil

From the last part, it is a description about the structures of government bond market in each countries.

There is a common characteristic that all the four countries have *quite substantial proportion of government bonds*. The Proportions of government bond in China, the USA, Germany and Brazil are 33%, 55%, 44%, 48% respectively. Compared with other countries, the USA has most proportions on the government bonds. And on the contrary, the China has the fewest proportion. Here is an interesting thing that all of the countries have much *more proportion of federal government bond or treasury bonds than the proportion of local government bonds*, except Germany. As the one of the most economic-developing market, the local government in Germany has stronger power of repaying. And with the support by the Federal Government in Germany, it has more developing strategies to make the local government bond market develop.

And here are some similarities between these countries. The structure of their government bond market consists of submarkets which are divided according to different types, the participants that are usually divided as issuers, investors and special institutions.

4.3 The Characteristics of Government Bond Market in Each country

The characteristics of the government bond market are quite vital in comparing how the government bond market works differently. There is no doubt that the the natures decide the government bond market and the characteristics decide how the government bond market work and bring what impact on domestic economic.

4.3.1 The Characteristics of Government Bond Market in China

The characteristics of Chinese government bond have five aspects. The first is the *principle of voluntariness*. It means the purchase behavior of investors are voluntary. And there is no force for government to require them to purchase. The second is *high safety*. It means that the government bonds have high safety, low risk and lower profit than other bonds. The government bond usually has higher credit level to ensure the capital safety. The third is *high liquidity*. Because government bond has higher credit, this bond is more attractive to investors and easier to liquidate. This bond, usually short term government bonds, has a higher liquidity than other bonds. The next is the *treatment of tax free*. In China, the government set up a concessional tax policy to raise capital for public service construction. And local government also has a series of concessional policy to absorb investors. The last characteristic is *stable profit*. Although the government bond has a lower interest rate than other bonds, the interest rate and repay term are fixed. The market price of it is relatively stable. And the government has higher credit and strong economic power to repay the profit.

4.3.2 The Characteristics of Government Bond in the USA

After two oil crisis in the USA, financial liberalization and globalization make the USA government bond market fit the times. In its bond market, the government bond can be divided into three types: treasury bonds, municipal bonds and government agency bonds. The first character is *high safety*. The government bonds are issued by

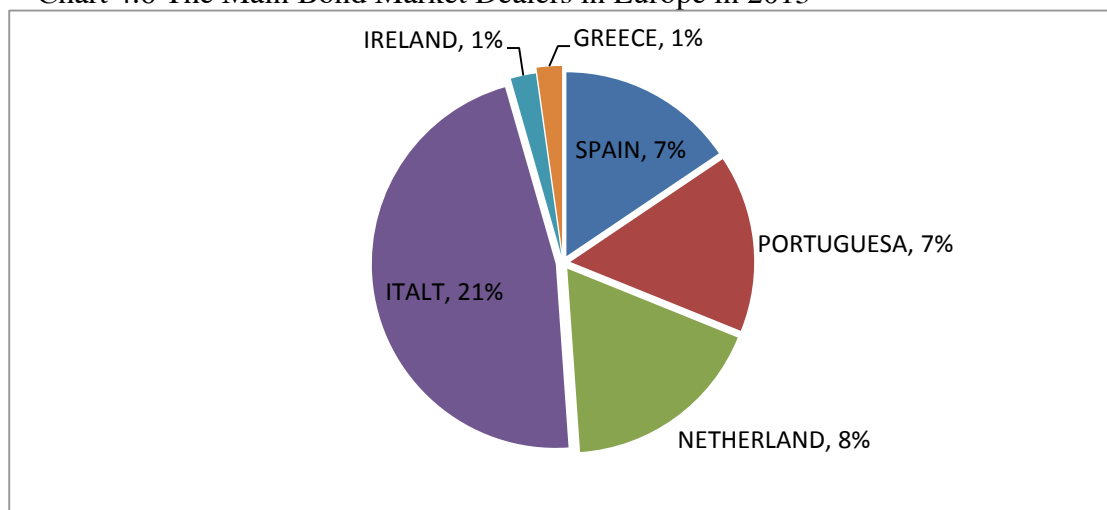
government. The government takes the responsibility of repaying the principal with interests. It presents the credit of the whole country. The government bonds have the highest credit level comparing with other bonds. The second character is *high negotiability*. As a kind of national bond, the government bonds usually are issued at a large amount. At the same time, it has good credit, strong competitive power and advantageous market property. So the USA government has the developed secondary market. It not only allow the bonds trade on the exchanges but also can be traded on unlisted market. The developing secondary market provides convenience for the transaction between government bonds and greatly inceases the liquidity. The third character is *stable profit*. As we all know, the investors can get profit by purchasing government bonds. The interests are promised by the government. Comparing with other bonds, the government bonds has highest credit level and lowest risk. In the USA, the government bond interests are stable and fixed so the transaction price will not have big fluctuation. Both sides of transaction can get relatively stable profit. The last one is that *issues have high pellucidity and issued time is fixed*. In the beginning of the year, Treasury Department of United States will draw up a plan of issuing bonds accoding to budgetary outlays and then promulgate this plan to the market participants at a fixed date. The characters of programmatic and pellucidity provide the government bond market effective information. It can also improve market work efficiency and steady the price of government market. The government bonds are issued at a fixed date and usually are promulgated previously. In the USA, each weeks sell 13-week and 26-week treasury bonds. Each four weeks sell 52-week treasury bonds. Each months sell 2-year and 5-year treasury notes at once at auction. Each quarters sell 3-year treasury bonds, 10-year treasury bonds and index bonds. And 30-year treasury bonds are sold three times a year.

4.3.3 The Characteristics of Government Bond in Germany

In German bond market, the financial bonds is in a dominant position. And government bonds rank after financial bonds. It is three-quarters from the whole GDP. The German government bonds has some important characters. The first is that the *proportion of government bonds decrease continuously*. With the strategy of Bundestag Bank, the proportion of financial bonds has increased a lot. And amount of

the government bonds gradually decreased. Till now, the proportion of government bonds has decreased from 40% to 15% since 1995. The Deutsche Bank is the biggest bidders of German government bonds. The second character is *low risk*. As we all know, the Germany is one of the most prosperous economy countries in the world. The government has enough power to guarantee the repay to investors. And according to the credit rating system in Europe, the German government bonds rank triple A. It is the highest credit level compared with other bonds. The third character is *stable development*. The government bonds profit rate is inversely proportional to its credit level. German government bonds have little fluctuation by the economic. The profit rate is usually stable. During the European Debt Crisis, German government bonds is popular between each countries investors because of its great economic situation. The German government bond market has been a safe harbour of capital risk. The last character is *low issuing price and huge issuing amount*. Seeing it in following chart, the transaction amount takes 33% in European main bond dealers.

Chart 4.6 The Main Bond Market Dealers in Europe in 2013



Source: www.worldbank.org

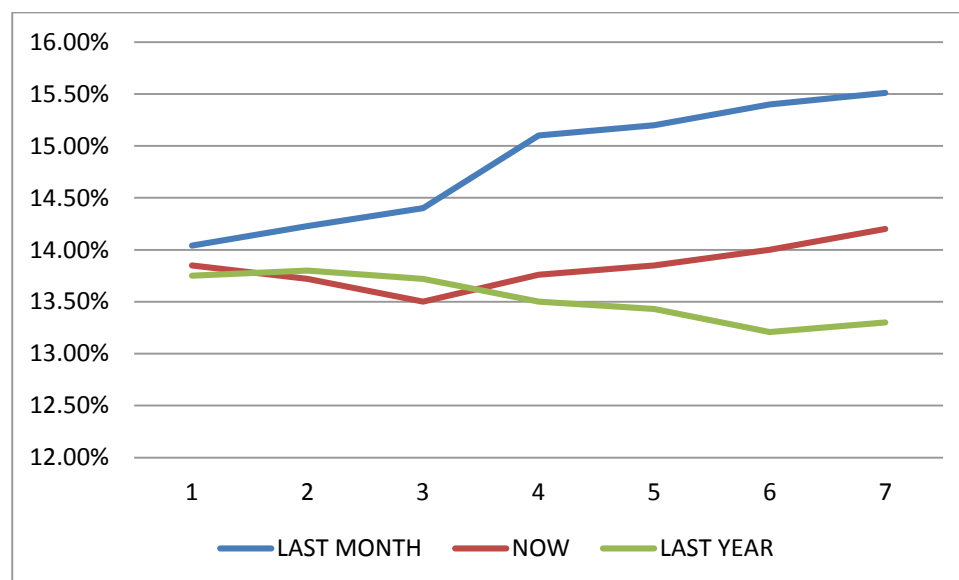
German government bonds keep the situation that low issuing price and stable transaction amount in Europe.

4.3.4 The Characteristics of Government Bond in Brazil

As the new emerging government bond market, the main character of Brazil government bonds is active. It was in 1990s-2004 that the economic in Brazil has improved a lot. The against inflation policy and a series of regulating laws helped the

bond market get the unprecedented development. The basic bond market system which include regulation, issue and operation has set up. After 2004, the bond market gradually develops very well in Brazil economic system. It has set up a improved system that issues government bonds, corporate bonds and other financial bonds. And also the private sector bond market improves and gradually in an important position. The government bond market ranked eighth in the world in 2008. The issue method is competitiveness tender issue. And the federal government bond is issued systematically by Brazil Ministry of Finance. In general, the scale of Brazil government bond market and amount of federal government bonds increase a lot. The second character is high government bonds interest rate. As we can see in the following chart, the profit rate is very high. It was the newest data in 20.03.2016.

Chart 4.7 The Yield Rate of Last Month, Now and Last Year in 2016



Source: www.worldbank.org, author

The red line presents a month ago. The blue line means now. And the lighter blue is the data from last year. As we can see, the profit rate is stable and it is a sustainable growth. And I made a chart about changes in profit rate of Brazil government bonds in March, 2016.

Chart 4.8 The Changes in Profit Rate of Brazil Government Bonds in 2014

BONDS	PROFIT RATE	BASIS	HIGHEST	LOW EST	CHANGES	%in changes
9 month	13.660	13.660	13.880	13.380	0.000	0.00%
1 year	13.560	13.540	13.570	13.524	+0.020	+0.15%
2 year	13.390	13.405	13.405	13.374	-0.015	-0.11%
3 year	13.695	13.865	13.715	13.650	-0.0170	-1.23%
5 year	13.865	13.800	13.980	13.680	+0.065	+0.47%
8 year	14.040	13.980	14.225	13.810	+0.060	+0.43%
10 year	14.070	14.060	14.200	14.041	+0.010	+0.07%

Source: www.worldbank.org, author

The profit rate of each government bonds is very high. And the *profit rate is increasing contiously*. The profit rate of Brazil government bonds has come into a highest point. It means the risk increases and it may cause that the credit rating of Brazil government bonds will decrease. The biggest economic entity in Latin America will lose its investment credit rating because of its huge changes. The financing costs will increase a lot and the Brazil government bonds will lose a lot of investors confidence. It seems like a severe economic recession in Brazil. There is no doubt that the Brazil government bonds market will suffer a huge loss.

4.3.5 Comparison of Charateristics of Government Bond Market in Selected Countries

The characteristics of government bond can provide the information for the analysis of researching government bond markets in each country. From the last part I make a description, the government bonds in each country hava many things in common.

The most common things is the government bond in all countries are *higher safety, higher liquidity, lower risky and stable profit* than other bonds in domestic bond market. Compared with the corporate bonds, the government bonds are issued by government which has stronger repaying ability than the corporates. The government always has better credit level than other companies or institutions. It means because the government bonds have higher credit, this bonds are more attractive to investors and easier to translate it into cash. So the government bonds have higher liquidity. The government has few risk in credit and default and brings investors less risk. The stable profits come from the yield to maturity when investors buy the government bonds from issuer, the yield is designed at a fixed interest rate. The profit is fixed and will not be changed from other factors.

Chart 4.9 The Differences of Government Bond Market in China, the USA, Germany And Brazil

		China	The USA	Germany	Brazil
Commons	Principles	The Principle of Voluntariness			
	Liquidity	High			
	Safety	High			
	Risk	Low			
	Negotiability	High			
	Pellucidity	High			
	Issued Time	Fixed			
Differences	Dominant In Bond Market?	No	Yes	No	Yes
	Interest Rate	Low	Low	Low	High
	Issuing Price	Low	Low	Low	High

Source: www.chinabond.org, author

From this chart, we can easily get the information of the similarities and differences in government bond market in each country. And there are some unique characteristics in the government bond in each country.

4.4 The Main Types of Government Bond in Each Country

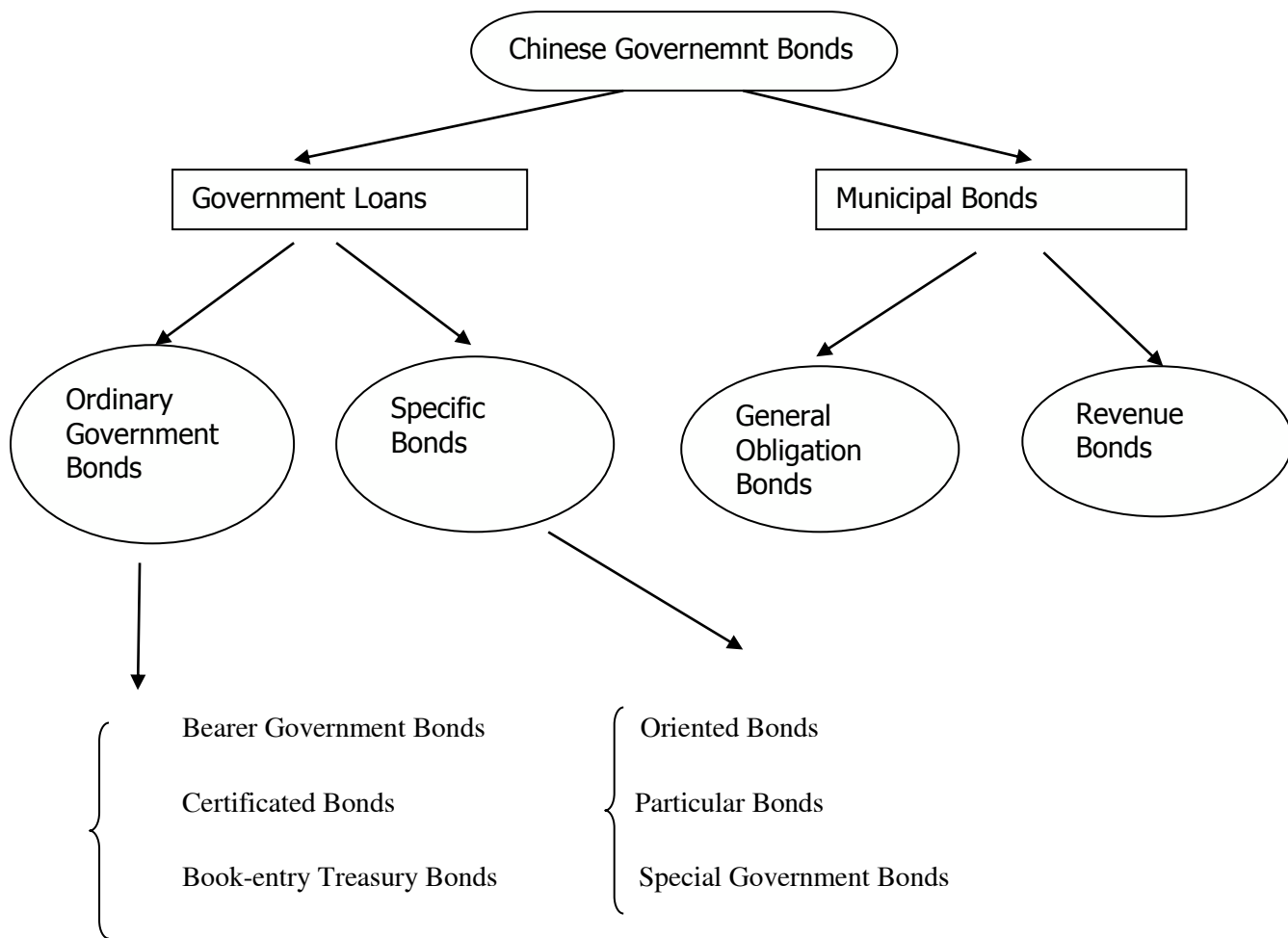
The main transaction body in government bond market is governments. As the government bond market can be divided into several sub-markets in each country, the types of government bonds also can be divided into many kinds. There are many different government bond market in each country. It is essential for us to know clear how much the types, how they functions and some significant factors of the government bonds. And after know deeper about the government bonds, the comparison will be based on the different types with different volume, interest rate, and rating.

4.4.1 The Main Types of Government Bond in China

The government bonds can be divided into two main types. As we can see it in the following chart.

There are main two types in chinese government bond market: governemnt loans and municipal bonds. The government loans are issued by central government in China. This bond contains ordinary government bonds and specific bonds. The ordinary government bonds contain bearer government bonds, certificated bonds and book-entry treasury bonds. The specific bonds contain oriented bonds, particular bonds and special government bonds. The municipal bonds contain general obligation bonds and revenue bonds. These bonds function as financial instruments in chinese government bonds. Their characteristics, functions, amount are different. It will be introduced in next chapters.

Chart 4.10 The Classification of Chinese Government Bonds



Source: www.chinabond.org, author

4.4.1.1 Government Loans

The first is treasure bills or government loan. It is issued by Chinese Ministry of Finance. This bond is issued to provide financing for Chinese key construction projects and make up financial deficit budget. It hasn't been an instrument on open-market business. The terms of it are usually three, five or ten years. The government bond interest rate is decided by government. In other words, the interest rate, amount and scale are both influenced by government. The important measurable indicators to measure if one period scale of government loan is efficient are debt ratio, dependence degree of debt and government bond debt servicing ratio. The debt ration is an indicator to measure the weight of government loan accumulated balance in gross national products in same period. In China, this index usually floats around 40%. Taken altogether, the government debt risk is controllable risk. The dependence

degree of debt is proportional relation between debt income and fiscal expenditures in current year. In China, this index has two methods to calculate. The first is to use debt income to divide fiscal expenditures in current year then multiply 100%. This result is national fiscal debt dependence degree. The second is to use debt income to divide the central government fiscal expenditures then multiply 100%. This result is central government fiscal debt dependence degree. The proper range is 15% to 20%. China usually are 23% that is higher than the standard. It reflects that Chinese fiscal expenditures are higher than debt income. The last indicator is government bond debt servicing ratio. It is a proportion between government loan service payments and fiscal income in current year. The lower the result is, the stronger the debt-paying ability of central government. In recent years, this results gradually increase and more than standard that is 20%. It reflects that debt-paying ability of Chinese government is more and more weak.

4.4.1.2 Ordinary Government Bonds

The government loan can be divided into two types. The first is ordinary government loan which is to raise capital. It contains bearer government loan, certificated bonds and book-entry treasury bonds. The bearer government loan is a bond which there is no name of bond holders or units on par value. It is usually issued on the form of physical bonds. The characteristics are bearer and do not report loss. It can list circulation that suitable for financial institutions and the investors who have strong investing idea. The certificated bonds, also called saving bonds, is issued by filling certificate of receipts rather than print physical bonds. The first character is that purchase and change conveniently. The next is that can endorsement and report the loss so the safety can be ensured. And another character is that this bond can't trade in market but it can redeem in advance. The fourth is low interest risk. And the last is no market risk. Book-entry treasury bond is that the bond holders register the government bond they hold in security account and they only receive receipts and statement of account to approve their ownership. One character is that this non-physical bond can provide more safety. And it can circulation in market and has a flexible negotiability. It is more suitable to issue in a short term. And it has a lower

costs because it can be issued by exchange houses and internet. And of course, its profit is quite considerable.

4.4.1.3 Specific Bonds

The government loan also has another type--specific bond which contains oriented bond, particular bond and special government bond. The specific bond is issued to improve profit and capital. The oriented bond is to collect from pension fund, unemployment insurance fund and other social insurance fund by Chinese Ministry of Finance. It is used to raise national construction fund and strengthen the investment management of social insurance fund. The particular bond is long term government loan that Chinese Ministry of Finance issued to the four state-owned and sole proprietorship banks in 1998. This amount is two hundred and seventy billion. The money was used to supply the capital for the four state-owned and sole proprietorship banks. The special bond is a ten-year coupon bond with 5% annual interest rate which was issued by Chinese Ministry of Finance in 1998 to Industrial & Commercial Bank of China, Agricultural Bank of China, Bank Of China and Bank Of China. The amount is one hundred billion. It is issued to raise Infrastructure investment for national economy and social development which is urgent needed. The main characteristic of government loan is short-termism. It reflects on these three aspects. The first is financing behavior tend to short. The short term and high rate make the advantaged of gilt-edged bonds doesn't take effect. The second is the irrational issuing mechanism. The third is the government pays more attention on consumption and pay less attention on development. It can obviously reflect on the allocation of capital. The government pays more attention on direct profit and less in social benefit. And government pays more attention on individual investors and less than institution investors.

4.4.1.3 Local Government Bonds

Besides government loans, the another important government bond is local government bond. With the increase of local fiscal difficulty, the Chinese government has focused more and more on local financing problem. The local government bond is a bond that issued by local government as an issuing body. The local government

bonds are issued to raise money for local transportation, telecommunication, residence, education and medical treatment which are approved by Chinese Ministry of Finance.

4.4.1.5 General Obligation Bonds

The first is general obligation bonds. Because Chinese central and local government have heavy debt loan, the government lifts a ban to issue local government bonds. The local government bond has a short history and just broke the ice. The oriented bond is a kind of government bond that the government ability of levy is being as a collateral. The important characteristics are three. The first is that there is few defaults on repayments. And the second character is that this bond is issued and repay spontaneously by local government. And the last character is that this bond has a high credit level and low financing costs. Its credit level only ranks after the government bonds. It has a strong safety.

4.4.1.6 Revenue Bonds

The second type in local government bond is revenue bond. The collateral of this bond is the profit of government fund projects. Its repay capital and interest come from the profit of investment projects, such as city water, suburban railway and the fee of airport. The characteristics of this bond are five aspects. The first is the issuer must be agent institutions authorized by central or local government. The second is that the whole raised capital must be used into the construction of public service. The third is that the sinking capital comes from its own profit and maybe certain limit subsidies from government. The next character is that this bond has a more concessional treatment which usually contains free interest tax and deductions and exemptions of interest tax. The last characteristic is that this bond often uses the operation of marketization.

In summary, the local government bond is an important part in economic system. In China, the issuers of it are usually local government at each level. They can rely or not rely on empowering by central government to arrange rationally and efficiently issuing plans according to their own economic developing level. The local government bond has strict limitation of laws and regulations. The issuing of it must be wrote into the fiscal budget and received the unified and rigid regulation and

supervision. This bond is issued with purpose because it is used to raise capital for the construction of social public services. And it mainly depends on the credit level of the local government. The local government must undertake the relative debt risk. The local government bond is issued in a range of location. It has vivid territoriality. According to this condition, the issuing amount of it is not too much. And the principle when Chinese local government bond is issued is that must combine the practical situation with local government economy conditions.

4.4.2 Main Types of Government Bonds in the USA

Since the 2008 Finance crisis, the USA bond market has developed a complete system. Its developing speed turns to be stable and slow. Till now, the USA government bond market functions as the financial bond leader in the world. According to the issuers of bonds, the government bonds can be divided into three main types. They are treasury bonds, municipal bonds and government agency bonds. According to methods of circulation, it can be divided into negotiable government bonds and un-negotiable government bonds. According to the yield to maturity, it can be divided into short-term government bonds, mid-term government bonds and long-term government bonds.

Chart 4.11 The Types of Government Bonds in the USA

(1),Treasury securities	Treasury bills
	Treasury notes
	Treasury bonds
(2),Municipal bonds	General obligation bonds
	Revenue bonds
(3),Government agency bonds	Federal agency bonds
	Mortgage-backed bond
	Asset-backed bonds

Source: www.sifma.org/research/statistics.aspx, author

4.4.2.1 Treasury Securities

A treasury security is a marketable, fixed-interest the USA government debt security with a maturity of more than 10 years. Treasury bonds make interest payments semi-annually and the income that holders receive is only taxed at the federal level. It is a kind of government bond that issued by national fiscal authorities (it's Ministry of Finance in the USA) to remedy fiscal payments disequilibrium. The debtor of this bond is nation. And the guarantee of repayment is national financial revenue. It has hardly default risk. And it has the lowest risk in the bond market. Not same as Chinese treasury bonds, the treasury securities in the USA has more types. According to the different types, the yield to maturity and denomination are different. In the USA, the treasury securities have been the most important credit instrument. The first important character is that the interest rate of treasury securities is the concentrative reflection of market interest fluctuation. The interest rate are tightly relative with commercial papers and certificates of deposit. The treasury securities can provide hedges for these financial papers. They have strong liquidity to transfer into cash in secondary market. The second character is high credit level. General treasury securities are direct debt from government. It is a kind of lowest credit risk bond for investors. In some way, it's the best choice for investment. The last character is high profit. Although the interest rate of treasury securities is lower than other bonds or bank deposits, it doesn't need to pay income tax. So investors can get higher profit than actual.

There are three types in treasury bonds according to the yield to maturity. They are treasury bills, treasury notes and treasury bonds.

Treasury bill is a kind of short-term treasury bonds which is issued by the USA Treasury Department. It is one of the most important and active credit instruments in the whole bond market. It is a debt bond that the government promises the bondholders a certain amount in a fixed day (usually one year or less than one year). The function of treasury bills is adjust the temporary surplus and deficiency of national treasury capital circulation. It is a bond that usually has high liquidity. The term is usually one year or less than one year. It is sold by competitive bidding. And it is sold at a discount. Compared with other bonds, the treasury bills don't pay fixed

interest. The profit of investors is the price spread from face value and issuing price. Under this bond, it has four types. They are three-month bills, six-month bills, nine-month bills and one-year bills.

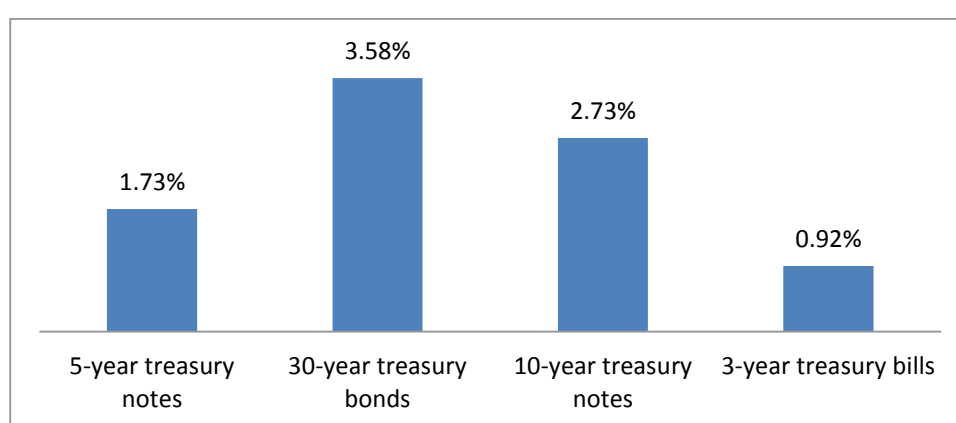
But most of treasury bills are three-month. The treasury bills have three main characters. The first is low credit risk. Because the government is the responder of paying interest. The government has the strong repaying ability. The second character is high liquidity. Treasury bills are easy to sell and turn it to cash. The last character is that treasury bills are easy to trade. The term is short and the transaction costs are lower than other bonds. The denomination of other bonds is usually at least \$100,000. Compared with other bonds, the denomination of treasury bills can be \$1,000, \$5,000, \$10,000 or \$100,000. The banks and some financial institutions which are allowed by government can bid and auction to get the treasury bills from the government. The government ranks the bid price from high to low. Then it will confirm the winning bidders until all treasury bills are issued according to reverse order. If the bank bid a higher price, the loss will be large. On the contrary, if the bank's bid price is too low, it will go out of this bidding.

Treasury notes is a marketable U.S. government debt security with a fixed interest rate and a maturity between one to ten years. Treasury notes can be bought either directly from the USA government or through a bank. Compared with treasury bills, the term of treasury notes is longer. It can make the government use capital more stable. The main function of treasury notes is remedy deficit or invest other things rather than temporary circulation. The treasury notes have three main types. They are two-year notes, five-year notes and ten-year notes. The two-year treasury notes are auctioned in January, February, April, May, August, October and November. The government promulgates the auction price in the mid of month and decides the price one week later. Then the delivery will occur around the end of month. The five-year treasury notes and ten-year treasury notes are auctioned in the second month of each quarters (usually February, May, August and October). One important change in the USA treasury notes and treasury bonds is that the profit rate spread is at a record high. In 2014, the five-year treasury notes in the market increased one basic point. It was 1.731%. At the same time, the thirty-year treasury bonds decreased five basic point. It was 3.577%. The gap between them were 1.85%. It was the lowest

point since October, 2009. Furthermore, the profit rate of ten-year treasury notes decreased two basic point. It was 2.732%. And the profit rate of three-year treasury notes increased two basic points. It was 0.924%. It was the biggest gap between treasury notes profit rate with treasury bonds profit rate since 2009. The reason caused it was investors continued undersell the treasury bonds which are most sensitive to the fluctuation of interest rate.

Here is a chart about the interest rate changes in some treasury bonds.

Chart 4.12 The Changes in Several Treasury Bonds in the USA in 2013



Source: www.worldbank.org, author

Treasury bonds (T-Bond) is a marketable, fixed-interest U.S. government debt security with a maturity of more than 10 years. Treasury bonds make interest payments semi-annually and the income that holders receive is only taxed at the federal level. The term of treasury bonds are usually more than ten years and less than thirty years. People usually think that the treasury bonds are the safest security because the USA government has complete credit guaranty. Only when natural calamities and man-made misfourtnes, the matured treasury bonds can be paid certainly. The longer maturity, the higher profit you get because you also face more risks. The treasury bonds also face inflation risk and credit risk, the treasury bonds are more attractive than treasury bills and treasury notes. Another advantage of it is that the state or local income tax is not calculated included in the invested profit. When other countries are trying to slow down the spead of economic development, the USA starts to increase interest rate. The profit rate of the USA treasury bonds is higher and higher than other countries. According to the American Merrill Lynch index, the

profit rate of the USA ten-year treasury bonds and longer term treasury bonds has increased 1.4% than other countries. In December 2015, The Federal Reserve decided to increase profit rate. It was the first time in recent ten years. According to forecast, it will increase twice in next year at least. And it may come to 1.375%. On the contrary, the European countries tend to decrease interest rate. At the same time, the European Central Bank set rate-cut strategy. The low inflation rate and good economic outlook makes the USA treasury bonds popular with investors. Between investors, the treasury bonds is more attractive than treasury bills and treasury notes. The dominant holders of treasury bonds is China. Since 2014, the price of ten-year and thirty-year treasury bonds increases continuously.

4.4.2.2 Municipal Bonds

It was a long history of municipal bonds in the USA. The time after the war of independence and before federal government set up, the local government provided bills for raising money and war. The municipal bonds have an important function in the development of social and economic. It was 1812 that the municipal bonds come into sight. Till now, the influence of the USA municipal bonds has reflected on every aspects. It influences on the infrastructure of water supply, transit and government constructure. Also it influences on basic social services of medical treatment, education and cultural sites. They are all provided for capital from the government for social benefit. In a word, the municipal bonds is an obligatory right issued by state or local government to provide capital for government operations, social service and infrastructure. Till 2008, the amount of municipal bonds was 2.69 trillion dollars. It was 42% of whole government bonds. But the USA government set a strategy of issuing large amount of treasury securities. So the scale of municipal bonds decreased but developed firmly. In municipal bonds, there are more than 80% are long term municipal bonds.

The USA municipal bonds has four obvious characters. The first is *tax relief*. In USA, it's not necessary to pay for the income tax from the interest income. Municipal bonds is used for public purpose or social service. So the most important character is income tax free. The second character is *good credit*. The credit level of municipal bonds is only lower than treasury securities. With the cooperation of insurance

companies, the municipal bonds become safer and more reliable. But it doesn't mean there is no credit risk in municipal bonds. The third character is *high after-tax rate*. Generally speaking, the higher the credit level is, the lower the interest rate. The credit level of municipal bonds is lower than treasury securities. And because of the strategy of income tax free, the municipal bonds has higher after-tax rate than other government bonds. The last character is that *the municipal bonds is combined with insurance*. The issue operation was combined with insurance since 1970. If the bonds issuers can't pay for the debt when maturity, the insurance of municipal bonds can promise the investors principal and interests.

There are two main types in municipal bonds. They are general obligation bonds and revenue bonds. The first is general obligation bonds. It is issued by each municipal government. The debt basis is their taxing power. This bond is guaranteed by general taxing power of government. The repay is from the government tax revenue. the raised capital from issued general obligation bonds is usually used for build some municipal facilities like expressway, airport and park. It has the lowest default risk and highest credit level in all municipal bonds. The investors can get back the principal and interests on time.

The revenue bonds is usually used for building one certain infrastructure. It is issued by agent institutions, committee or legal institutions of local government which is legal. And then pay for the debt by using these facilities for value. The risk of revenue bonds is higher than general obligation bonds. And the interest rate is also higher. The capital of this bonds is used for building road, hospital and sewer. Revenue bonds contain four types. They are industry developing bonds, pollution control bonds, dwelling bonds and hospital bonds. Industry developing bonds is used for building some industry projects which private investors are not willing to do. The pollution control bonds is used for building facilities to reduce pollution. The dwelling bonds is used for building houses for low-income earners. And hospital bonds is to build new hospitals or improve medical level. There are also other bonds contained in revenue bonds, such as air line bonds and resources recover bonds.

4.4.2.3 Government Agency Bonds

Besides treasury securities and municipal bonds, other government bonds could issue bonds to raise money. The important function of this bonds is financial assistance for social service projects. For example, agriculture, small enterprises and the loan of house first-buyer. The government agency bonds also has an important function in the USA bond market. According to the interview from the USA Bond Market Association, the amount of agency bonds in the USA has been 1070190 milion dollars. It takes 41.36% in bond market. Compared with treasury securities, his bonds doesn't have full-faith-and-credit guarantee. But investors also think highly of it because it is issued by government. This bond is usually issued by two kinds of institutions. First is institutions which belongs to federal government. Their capital resource is from the federal government. Second is the institutions which set up by federal government, but now they operate independently. The government doesn't guarantee this bond directly. But these institutions are actually controlled by government. There are four characters about government agency bonds. They are good discharge power, stable profit, low risk and high safety. In general, this bonds is an important part in government bonds. The main issuing institutions are *Federal National Mortgage Association, Federal Home Loan Mortgage Corporation, Farm Credit System Financial Assistance Corporation, Federal Agricultural Mortgage Corporation, Federal Home Loan Banks, Student Loan Marketing Association, Small Business Administration and College Construction Loan Insurance Association*. Further more, this bond can be divided into three types. They are federal agency bonds, mortgage-backed bonds and asset-backed bonds. The issuing subjects of federal agency bonds is the enterprises which supported by government. But it lacks the credit guarantee of government which may causes higher risk. And it contains primary and secondary debt. The mortgage-backed bonds is usually issued by Federal National Mortgage Association and Federal Home Loan Mortgage Corporations. It is guaranteed by national mortgage association and supported by home loan mortgage pool. It contains pass through bonds and guarantee-mortgage-loan debt. This bonds is usually used for house loan. It has a lower financing costs. The asset-backed bonds is created by non-mortgage financial assets and supported by potential assets. The

securitized assets contain credit card, auto-loan and equipment leasing. This bonds decrease mortgage rate of financiers in a certain extent.

4.4.3 The Main Types of Government Bonds in Germany

German government bonds contain three main types in it. They are federal government bonds, federal agency bonds and local government bonds. The main bonds in German government bonds market is federal government bonds. It takes a dominant proportion. All of those three are many important bonds in German bond market. They functions in each part and also cooperate well with each other. And they work together to make the German economic improve stable. The main types are showed in the following chart.

Chart 4.13 The Main Types in Germany

Federal Government Bonds	Federal Bonds
	Federal Treasury Bonds
	Federal Saving Bonds
	Financing Bonds
	Cash Cheque Bonds
	Discount Bonds
Federal Agency Bonds	
Local Government Bonds	Single Bonds
	Jumbo Bonds

Source: www.worldbank.org, author

4.4.3.1 Federal Government Bonds

Federal government bonds is the most important bonds in German government bond market. It is ranked triple A as the highest credit level in a long time. And its scale is ranked only after USA and Japan. The regulation and issue of federal

government bonds takes the division and cooperation of labor. The German Federal Ministry of Finance formulates and decides the policy of federal government bonds. The Federal Central Bank of Germany provides the technical service of issue. The German Federal Security Administration registers the bonds and repays the capital with interests. The Federal Financial Proxy Company carries out the specific operation as the biggest market makers in Germany. The individual investors and foreign investors are the most important bond holders in Germany. They usually buy federal government bonds from credit banks, credit institutions and financial corporate agents. The function of federal government bonds is to support public service, cover financial deficit and financing. There are two ways to classify federal government bonds. First way is to divide it by definition. It can be divided into federal bonds, federal treasury bonds, federal saving bonds, financing bonds, cash cheque bonds and discount bonds. The federal bonds are issued at a fixed price by government. The term is usually five years. It's active in secondary bond market but it can be purchased by foreign investors. Discount bonds are usually less than two years. It is issued by central bank. The second way is divided according to term. Short-term bonds which are less than one year. It is issued at discount. But it can be exchanged in the market. The one year to ten years mid-term bonds are issued for institution investors and individual investors. The negotiable bonds are faced to institution investors and the non-negotiable bonds are faced to individual investors. The ten years to thirty years long-term bonds are the main government bonds in German government bond market. Also the main transaction bonds between the foreign investors. It is issued by tendering and bidding. The most active government bonds are long-term government bonds. The scale and transaction amount is the hugest in all government bonds. Investors favor this bonds because of its low risk and stable profit rate. On the one hand, the stable economic development makes the German government bonds market be an attractive transaction place. On the other hand, the developed secondary government bond market also provides the advantageous conditions for the development of government bonds.

4.4.3.2 Federal Agency Bonds

The federal agency bonds is a kind of government bonds which issued by government authorized institutions. These institutions are relatively independent but still controlled by the federal government. These government authorized institutions has issuing power but the main regulation power is controlled by federal government. German federal agency bonds has no guarantees. Because the Germany Federal Government guarantees this bonds paying principal and interests conventionality by its tax income. These federal institutions are the government authorized institutions which relate to social service or government financing. They are usually Federal Railway, Federal Post and other institutions involved with social service. The federal government is only responsible for their own capital of these government authorized institutions. But this bonds is still safe and has stable profit rate because the *federal government can provide some repaying support*.

4.4.3.3 Local Government Bonds

Germany is a federated country. It is worked together by federal, states and districts. The local government bonds is a bond that issued by states and districts. There are 16 states and 14808 districts in Germany. Because of the functional limitation, the local government bonds is issued by state government. In Germany, the state government bonds is called Länder Bond. The states government bonds has the proportion as 21% in government bonds market. And the districts government bonds takes 0.06%. The main participants of local government bonds is states government bonds. So I focus more on this bonds.

There are four important characters about states government bonds. The first is diversified types. Lots of states government can satisfy the different needs for different investors. There are four ways to classify the states government bonds. It can be divided into small sizes bonds and benchmark bonds according to purchasing subjects. Small sized bonds is sold to individuals and small enterprises. Each purchasing amount is small and the term is usually less than five years. It takes almost 20% of government bonds. Benchmark bonds is sold to banks and investment fund. The term is five to ten years. And it takes 80%. The second classification is the

different amount of issuers. They are single bonds and jumbo bonds. Single bonds is issued by an individual state which has strong economic support. Jumbo bonds is issued by several states which has weaker economic support or lower issuing demand. The function is to decrease effectively the bonds financing costs and increase liquidity. According to the different financing currency, this bond can be divided into local currency bonds and foreign currency bonds. The main function of bonds financing is to *improve the local people's life*. And the source of repaying capital is tax income. So the local currency bonds is in a dominant role. There are 97% are sold in Euro. Others are sold in yen, dollars or franc. The states bonds also can be divided into common bonds and structured bonds according to whether they are guaranteed. The structured bonds can avoid the risk of interest and inflation. But the proportion of it is only 20%. After issuing structured bonds, the states government will transact hedging in the bank to avoid risk. The second character is *stable investors*. The investors are usually from Germany. 75% of states government bonds are hold by them. The bank industry has 55% and mutual funds has 9%. The third character is *implicit guarantee*. Each states should obey the loyalty principle according to the German Constitutional Court although there is no specific laws. It means if one state has no ability to repay the debt, other states or the federal government can provide support for repaying it. The last character is gradually tight issuing conditions. Before 2009, each states can decide whether issue states bonds and even the issuing scale. The German Finance Ministry has a weak control of regulation. With more and more laws published, the federal government sets a clear limitation about scale of states government bonds. It increases sustainability of states financial position.

4.4.4 The Main Types of Government Bonds in Brazil

The government bonds market in Brazil is a vital part in the whole economic system. At the same time, Brazil government bonds market is one of the most important bond market in the world. As a new emerging economic entity in developing countries, the amount and scale of government bonds is very considerable. There are main two government bonds in Brazil. They are federal government bonds and states government bonds. Here is a chart about the main types in Brazil.

Chart 4.14 Main Types in Brazil

Federal Government Bonds	Fixed Interest Rate Bonds
	Inflation Index Bonds
	Floating Interest Rate Bonds
Local Government Bonds	

Source: www.worldbank.org, author

4.4.4.1 Federal Government Bonds

According to the document of international clearing bank, the scale of Brazil federal government bond market has ranked eighth since 2008. Till now, the amount of it is 194390million reais.

The federal government bonds contain three main bonds. They are fixed interest rate bonds, inflation index bonds and floating interest rate bonds. Fixed interest rate bonds is a bond that the interest rate is fixed. And the profit will be paid in a certain days at a fixed price. It contains short-term fixed interest rate bonds, mid-term and long-term fixed interest rate bonds. In order to raise capital, the Brazil government often uses this bonds. Another aim is to build an effective interest rate curve by using clear basic interest rate. The inflation index bonds contain B serial government bonds and C serial government bonds. The Brazil Ministry of Finance issues constantly the government bonds of 3-year, 5-year, 10-year, 20-year, 30-year and 40-year government bonds which is relative with Brazil domestic consumer price index. The aim is to make IPCA increase more liquidity. The Brazil government combines the bonds profit rate with inflation rate to protect the actual benefit of investors. The floating interest rate bonds is not same as other countries. Its basic interest rate is interest of previous night. Other countries set quarter or semester floating rate as the basic interest rate. This bonds have two types, 4-year or 5-year. But the issuing amount is very small.

In all kinds of government bonds, fixed interest rate bonds and inflation index bonds both have a big proportion. They are 39% and 34%.

4.4.4.2 States Government Bonds

Looking through the whole government bonds in Brazil, the state government bonds is also a vital part in its bonds market. The states government bonds is used for financing for local government construction and provide the quality of people's live. The states government bonds are usually issued by states government which is authorized by Brazil Federal Government. The states government has the right to price the bonds and can adjust the scale of issuing bonds. The frequent states government is the strong economic entity which has enough capital to repaying for the investors principal and interest. The states government bonds has adjusted since 1980 because of three debt crisis in Brazil. During the time from 1960 tp 1980, the oil crisis made the interest rate increased sharply and finanlly the state government didn't have enough capital to repay this debt. The Central Government made an agreement with foreign investors and helped the states pay for the debt. The second debt crisis was in 1993. The states government couldn't pay for the debt to federal institutions. So the Central Government decided to helped each states pay for the debt again. During this period, the Central Government started to regulate the bonds issuing situation and published a series of laws to normalize it. The most serious debt crisis was in 1996. The annual inflation rate dereased sharply from 929% to 9%. On the one hand, the appreciation of currency made the proportion of welfare expenses increased a lot in states income system. And on the other hand, the tight monetary policy made the interest rate of the whole bonds increased greatly. So the states government refused to pay for the debt under the double pressure. The Central Bank decided to pay for partical debt to help recover the state awful economic situation. After that,the state government turns to a better situation and gradually recovered from the third debt crisis. Now the state government bonds is still active in Brazil government bonds market.

4.4.5 The Comparison of Government Bonds in China, the USA, Germany and Brazil

After introducing a description of main types of government bond market in each country, we can get a lot of useful information from the last part. In this part, I will get a comparison from the information that combines all countries' government bond

markets. In this comparison, it will be divided into three main part to compare, the treasury bond market, the municipal bond market and federal government agency bond market. And the comparing criterias are the difference in the government bond types, volume, interest rate and rating.

4.4.5.1 The Comparison of Treasury Bond Market

The treasury bond market is one of the most important parts in government bond market in each country. As I showed the pie chart in last part, the common characteristic for the four countries is that the treasury bond, or named as federal government bonds, has an essential role in domestic economic. All of these countries have at least the prportion of 20% in treasury bonds. And what's more, the main function of issuing treasury bonds is for the government to *raise capital for public construction and social service*, and *for government to make up the imbalance of the fiscal structure*. The former is reflected on building public transportation, schools, social medical assistance system and so on. The latter is to balance the fiscal expenses and receipts to function efficiently on financial system.

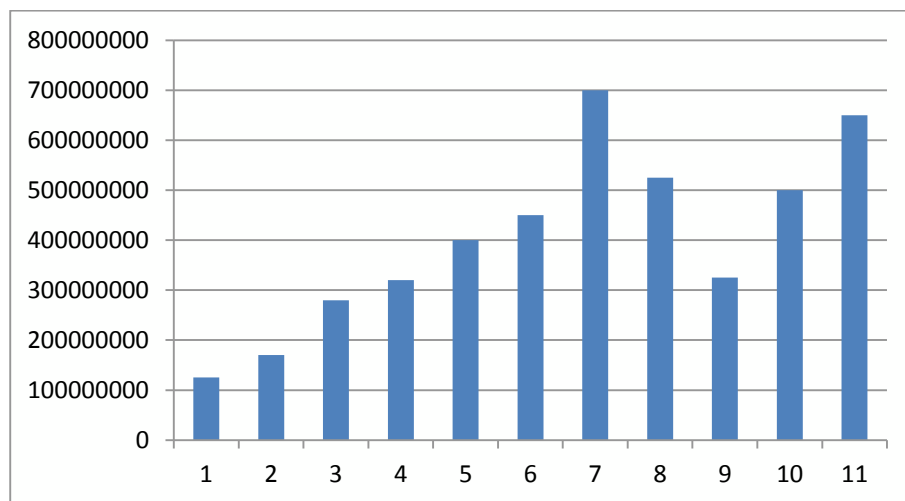
As for the differences, they are reflected on the *types of government bond, volume of the bonds, interest rates and ratings*. China has two main types, the government loans and ordinary government loans. And in total, there are six main types in government bond. They are bearer government loan, certificated bonds, book-entry treasury bonds, oriented bonds, particular bonds, and special government bonds in tresury bond market. The USA, which has the most transaction volume of government bonds, has totally three types of its treasury securities. They are treasury bills, treasury notes, and treasury bonds according to the maturity. And Germany, which considered the treasury bonds as important financial instruments, has six types of treasury bonds in total. They are divided into federal bonds, federal treasury bonds, federal saving bonds, financing bonds, cash cheque bonds and discount bonds according to the definition. The types of Brazil are three main types, the fixed interest rate bonds, the inflation index bonds and the floating interest rate bonds. The fixed interest rate bonds contain short-term, mid-term and long-term fixed interest rate bonds. The inflation index bonds contain 3-year, 5-year, 10-year, 20-year,30-year and 40-year government bonds. The floating interest rate bonds contain 4-year and 5-year bonds in it. In

general, China and Germany have the most treasury bonds, which are 6 types. And the USA and Brazil have both three types ranked after China and Germany.

The transaction volume of the treasury bonds in each country is very different from year to year.

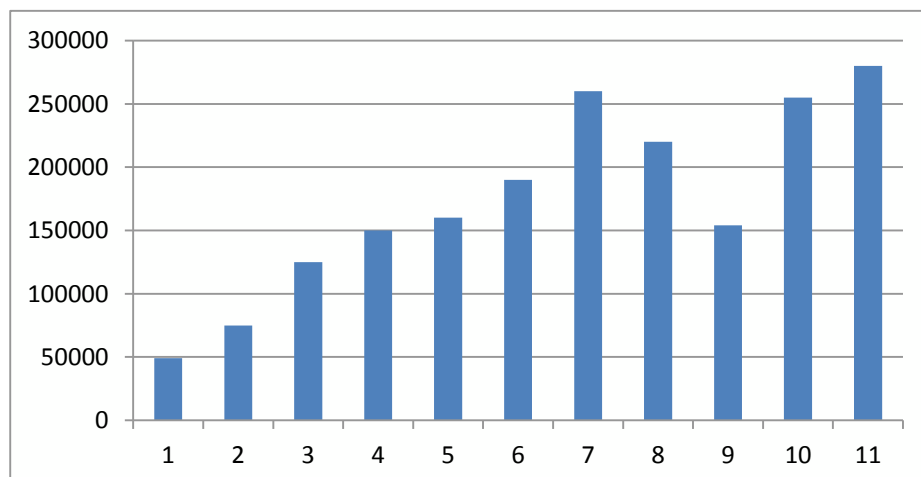
Here are four charts to show the transaction volume of treasury bonds in each country respectively.

Chart 4.15 The Transaction Volume (\$) of Treasury Bonds in China in 2013



Source: www.chinabond.com, author

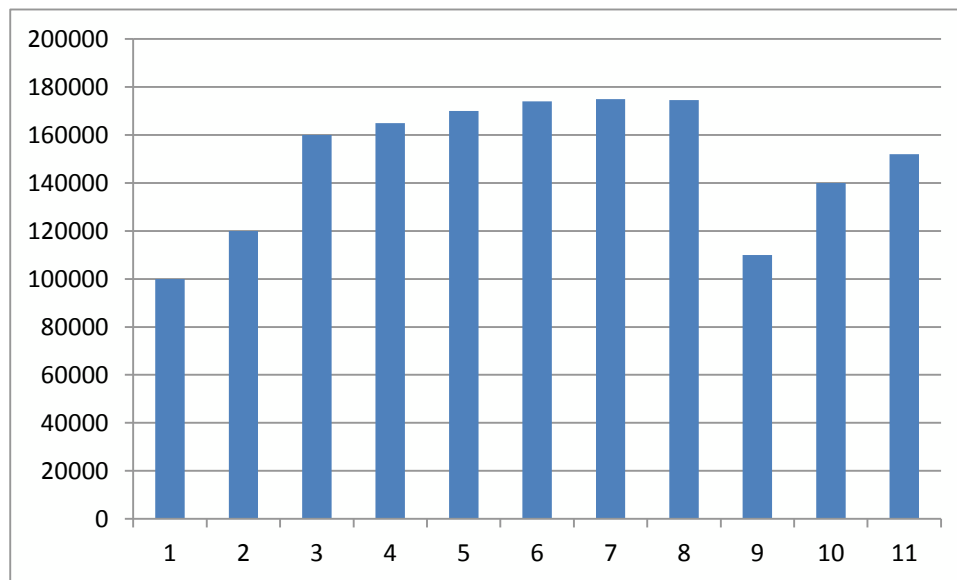
Chart 4.16 The Transaction Volume (\$) of Treasury Bonds in the USA in 2013



Source: <http://www.sifma.org/research/statistics.aspx>, author

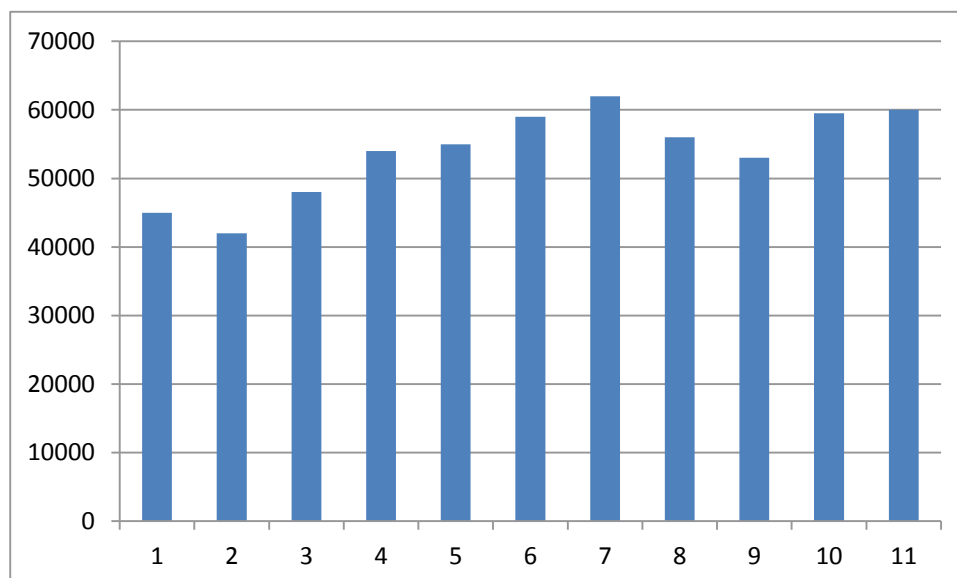
Here are several charts. All of them showed the bond market transaction volume in each country with dollars. As it shows, all the bond transaction volumes have changeable fluctuation in countries. The common thing between each country is that the transaction volume shows an obvious decrease in 2009. The reason is the big influence from the 2008 financial crisis.

Chart 4.17 The Transaction Volume (\$) of Treasury Bonds in Germany in Germany



Source: <http://en.boerse-frankfurt.de/bonds/yieldcurves>, author

Chart 4.18 The Transaction Volume (\$) of Treasury Bonds in Brazil in 2013

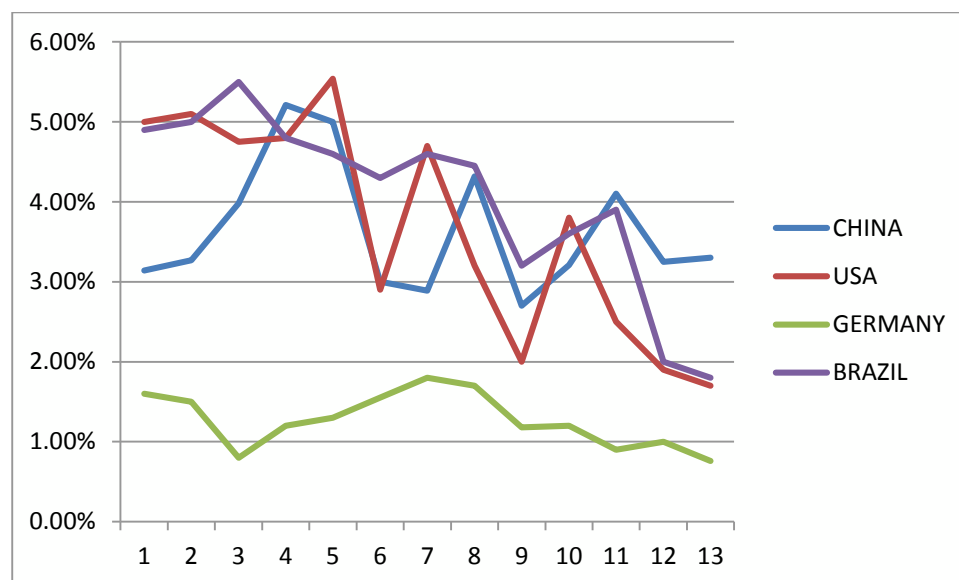


Source: www.worldbank.org, author

Compared these four graphs together, it is very clear that according to the transaction volume of treasury bonds, the USA ranks the top, Germany ranks the second, and China ranks the third and Brazil ranks the lowest. And the common characteristic is that the four countries all have a fluctuation trend of transaction volum. And they also have a decrease from 2007 to 2009 because of the financial crisis.

The another difference is the interest rate of the treasury bonds in each country. Here is a chart to show the difference of interest rates.

Chart 4.19 The Changes of Interest Rates of Treasury Bonds in China, the USA, Germany And Brazil



Source: www.worldbank.org, author

The chart shows the average interest rate of treasury bonds in China, the USA, Germany and Brazil during the period from 2001 to 2013. And we can see that the average interest rate of treasury bonds in Germany is the lowest. And the highest is Brazil. There is a trend of interest rate in China, the USA and Brazil is the changes are not smooth compared with Germany. And the fluctuation in the USA the sharpest. The interest rate of treasury bonds in Germany is usually under 2%, which far below the interest rates in China, the USA and Germany.

There are also some differences between the ratings in each country. The authorized international rating agency, the Standard's and Poor's, rates the treasury bonds from "Stable" to "Negative". And the price of the treasury bonds in China is increasing and the yield is decreasing according to the rating analysis. And the rating agency also gives a notice that if China still takes the ways of credit expansion to keep the economic developing rate above 6.5%, the treasury bonds will be rated lower than this time. The Moody's rates the treasury bonds as Aa3, which from stable rating changes to negative rating level. The rating changes show a decrease on the fiscal sustained development in China. And the rating also shows a increase of government debt in China. As same as China, the Prospect of the USA treasury bonds changes from stable to negative, which is claimed by the Moody's rating service. The rating of the USA treasury bonds changes from AAA to AA+. It means the credit of the USA treasury bonds is decreasing and the rating level of the USA treasury bonds is below the credit level of Canada, Uk, and many other countries. The rating level of treasury bonds in Germany is AAA, which presents a high credit rating, such as France, Austria and so on. But in recent months, the Moody's reduced the credit rating level of Germany treasury bonds. This situation makes the the yield of Germany treasury bonds decreases and the debt of federal government increases. The rating level of Brazil treasury bonds changes from BBB to BBB-, which is nearly to junkbonds. According to the worse and worse economic situation, the Standard's and Poor's decided to reduce the rating level of Brazil treasury bonds. Here is a chart about the rating between China, the USA, Germany and Brazil about government bonds.

Chart 4.20 The Ratings Changes Between Selected Countries

Countries	Ratings	Description
China	AA+ \Rightarrow BBB	Stable \Rightarrow Negative
USA	AAA \Rightarrow AA+	High Credit \Rightarrow Stable
Germany	AAA \Rightarrow AA+	High Credit \Rightarrow Stable
Brazil	BBB \Rightarrow BB-	Negative \Rightarrow Junk

Source: www.worldbank.org, author

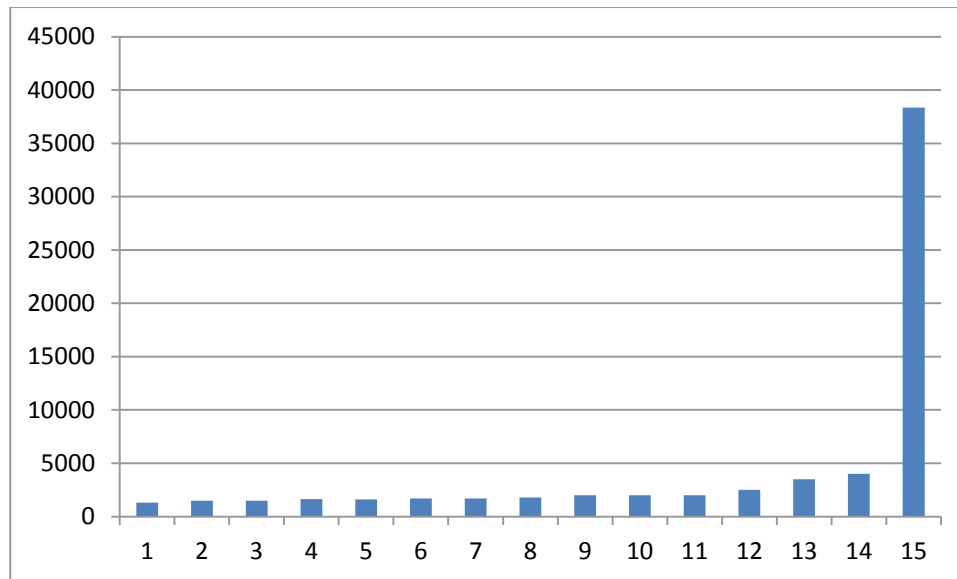
4.4.5.2 The Comparison of Municipal Bond Market

The municipal bond market, is one of the important markets in financial system. With the development of local cities, more and more municipal bonds are issued. So it is necessary for us to know about the municipal bonds. The municipal bonds in China has a short development history, as same as Brazil. These two countries are the *beginner of the municipal bonds*. On the contrary, *the history of municipal bonds in USA and Germany is longer* which have at least 30 years development history. The USA and Germany can represent the developed municipal bond market and China and Brazil are the representatives of developing municipal bond market.

The municipal bonds, or local government bonds, is a kind of bonds that issued by states or local government. The types of municipal bonds in China can be divided into two types, the general obligation bonds and revenue bonds. The former is issued for the government to release the heavy debt loan. This kind of bonds have few defaults risk on repayment. The latter is issued for local government to raise the capital of building up the construction of public service. As same as China, the USA municipal bonds also can be divided into two parts, the general obligation bonds and revenue bonds. The former bonds are guaranteed by general taxing power of government. And it is used for build some municipal facilities like expressway, airport and park. The latter is used for building one certain infrastructure. The two types in municipal bonds in Germany, are small sized bonds and benchmark bonds. Small sized bonds are sold to individuals and small enterprises. The benchmark bonds are sold to banks and investment funds. The function of these two municipal bonds is to decrease effectively the bonds financing costs and increase liquidity. The municipal bonds in Brazil are same as other countries. They are general obligation bonds and revenue bonds in total. China, the USA and Brazil have the siminar types in municipal bonds. And the Germany has different types compared with other countries. Compared with the treasury bonds, all countries have fewer bonds in municipal bonds no matter in the types and the numbers.

All the countries have different municipal bonds transaction volumes because they have different developing system in bond market. There are some charts to show the different volume in municipal bond transaction.

Chart 4.21 The Transaction Volume (\$) of Municipal Bonds in China From 2001 to 2015

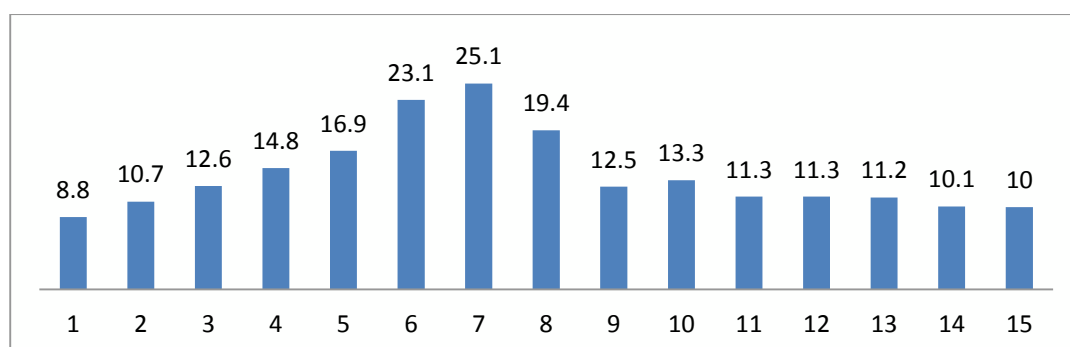


Source: www.chinabond.org, author

As the chart showed, the transaction volume of China municipal bonds is very low from the period of 2001 to 2014. After 2014, the volume increased sharply and reaches a peak at the number of 38350.62.

Here is a chart about the transaction volume of municipal bonds in the USA.

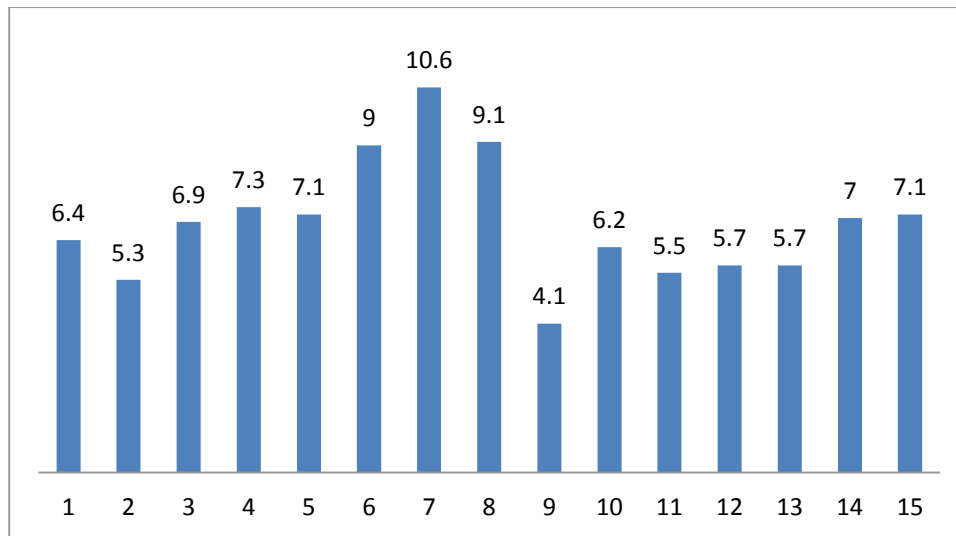
Chart 4.22 The Municipal Bonds Transaction Volume (\$) in the USA From 2001 to 2015



Source: <http://www.sifma.org/research/>, author

As we can see from the chart, the average daily transaction volume of the USA municipal bonds is very large. And it came to the peak in 2007 with the amount of 251 billions USD.

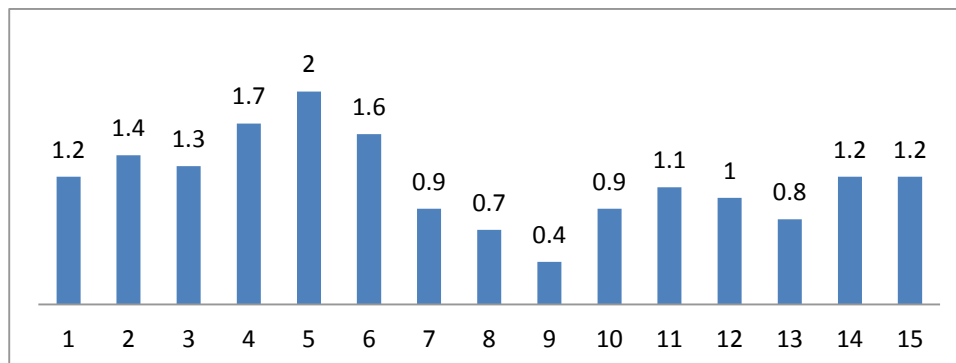
Chart 4.23 The Transaction Volume (\$) of Municipal Bonds in Germany From 2001 to 2014



Source: <http://en.boerse-frankfurt.de/bonds>, author

This chart is about the average daily transaction of Germany municipal bonds. The average daily transaction is always floating.

Chart 4.24 The Transaction Volume (\$) of Municipal Bonds In Brazil from 2001 to 2015



Sources: www.worldbank.org, author

This chart shows the average daily trading volume in Brazil.

The characteristic in common of the four countries is that *the changes in transaction volume is floating*. All of the four countries have a decrease in their transaction volume from 2007 to 2009, which is the period of financial crisis. And

according to the four graph, we can see that the USA has the largest municipal bonds transaction volume because the amount of average daily transaction is higher than other countries. And the country has fewest amount is Brazil. Compared with other countries, the USA has the most stable fluctuation of the transaction changes. China, which has fewer transaction volume from 2001 to 2014, increased almost seven times than ten years before. It is because of the encouragement from the government.

The yield of municipal bonds is one of the most important factors for investors to consider a bond. Which usually affects the yield to maturity is the interest rate. By comparing the municipal bond interest rate in each country, we can know how the interest rate reflects on the yield. According to the researches in 2015 of the Ministry of Finance in China, the average interest rate of municipal bonds in China is 3.52%. And the average interest rate of municipal bonds in the USA, Germany and Brazil are 4.1%, 3.75% and 1.62% respectively. Compared with other countries, *the USA municipal bonds has the highest interest rate.* And the Brazil, in which the municipal bond is a kind of new bond in domestic bond market. Usually the hysteretic economic cannot support the development of municipal bonds in Brazil .So the interest rate is lower than others. Compared with other European countries, the Germany has higher interest rate in municipal bonds because of the stable economic and excellent bond market system.

What is also important institution is the rating agency in each country. These rating agencies provide the investor objective analysis on the issuers and municipal bonds. There are some differences in each country. The rating on municipal bonds in *China is a newborn thing which has a short history.* And the ratings are given by central government in China. The local government bonds in the province Guangdong, Jiangxi and Shanxi are rated at AAA. And other local government bonds are rated on Aa or BBB. Because the municipal bonds are not stable enough and some local government has not enough financial support to repay the debt. The rating in the USA is usually AAA which represents a good credit level and a choice for investors to buy. Compared with other countries, the number of municipal bonds in the USA are more than other countries. As same as the rating of the USA, Germany also has a higher rating level, which shows it is worthy-buying. On the contrary, the rating in Brazil is not very good, or in other words, it is almost junk bonds. Because of the slowly

developed economic and unrestricted issuing volume, the Brazil's municipal bonds has a lot times of warns from the authorized rating agencies.

4.4.5.3 The Comparison of Federal Government Agency Bond Market

The federal government agency bond is one of the most important part in the USA and Germany. The federal government agency bond is issued by some institutions which are authorized by government in the USA and Germany.

The types of federal government agency bonds in the USA are three main types. They are federal agency bonds, mortgage-backed bonds and asset-backed bonds. The federal agency bonds are issued by the enterprises which supported by government. The disadvantage of it is that it lacks the credit guarantee of government which may cause higher risk of credit and default. The mortgage-backed bonds are issued Federal National Mortgage Association and Federal Home Loan Mortgage Corporations. This bonds are issued for house loans. And the asset-backed bonds are created by non-mortgage financial assets and supported by potential assets. This bond can decrease the mortgage rate of financiers in a certain extent. Compared with federal government agency bonds in the USA, the Germany has fewer types than it in the USA. The types in Germany are classified by functions, one is for financing and one is for social service construction. The issuers are usually Federal Railway, Federal Posts and other institutions involved with social service.

The volume of federal government agency bonds in both the USA and Germany are different. According to the data of WorldBank. The proportion of federal government agency in the USA takes up 13% in the USA bond market. And the proportion in Germany is 8%. And the amount of issues in the USA is almost double more than Germany. As for the interest rate, the rate in Germany is higher than it in the USA. They are 4.5% and 3.7% respectively. In the rating system, both of the two countries rank AAA, which represents high credit and stable.

5 CONCLUSION

In my bachelor thesis, the knowledge of bonds is introduced. Firstly it is a general description about the bonds from its definition, characters, functions and the connections with the whole country. Then it introduced the bonds markets in China, the USA, Germany and Brazil one by one which includes the main participants in bond market, bonds scale and diversified bond types in each countries bonds market. Next is a description about government bonds market in each country by describing their basic information, specific characters, main participants and main government bonds types. To compare them together, this thesis explains government bonds in each country by introducing their different characters, issuing method, functions and paying methods. Finally, the conclusion is drawn that the government bonds in China, the USA, Germany and Brazil have both similarities and differences. Their issuing subjects, issuing methods and main types are relatively similar. But the specific types of government bonds, functions and aim, history and rate of development are very different. The difference can be reflect on the region (Asia, Latin America, North America and Europe), developing level (developed countries and developing countries), history (early and lately) and economic policy (different economic developing strategies). There are some differences in the government bond market structures, government bond types, transaction volume and developing situation. On the other hand, the characteristics of government bond market and main participants have many things in common. To sum up, the USA has the best government bond market structure and largest transaction volume compared with others. The government bonds are good in Germany but they come to a worse situation in recent years. The government bonds in China has developed well since 2000, which has the fastest developing rate than the others. The government bond market does not develop so well in Brazil because of the imperfect economic strategy and terrible economy.

It is hard to decide which government bond market is better but from this comparison we can understand how the government bonds function in each country. According to the different social situation, government bond markets are very

different. It is necessary to comprehend bond markets and improve the bond market system by knowing their functioning.

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List of Abbreviations

T-Bonds: Treasury Bonds

MTN: Middle-Term Note

OTC: Over the Counter

T: Time

SRC: Securities Regulation Commission

SP: Standard & Poor's

CBF: The Clearstream Banking Frankfurt

GDP: Gross Domestic Product

FGPC: Federal Germany Proxy Company

DB: Deutsche Bundesbank

CPI: Consumer Price Index

CSRC: China Securities Regulatory Commission

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Student's name and surname

List of Annexes

Annex 1 The Volume of The Treasury Bonds changes from 2000 to 2015

Annex 2 The Brazil's Bond Market Transaction Volume (\$) From 2001 to 2014

Annex 1 The Volume of The Treasury Bonds changes from 2000 to 2015

YEARS	TRANSACTION VOLUME
2001	2929722000
2002	2054502000
2003	5159624000
2004	5199318000
2005	6579497000
2006	9832027000
2007	13929991000
2008	6754000000
2009	17015000000
2010	32384268000
2011	30765054000
2012	8821764000
2013	4780027000
2014	8163429000

Source: www.chinabond.cn

Annex 2 The Brazil's Bond Market Transaction Volume (\$) From 2001 to 2014

Years	Transaction Volume of Treasury Bonds (10 hundred million)
2001	5300
2002	5700
2003	6400
2004	6800
2005	7000
2006	7200
2007	7500
2008	9000
2009	10000
2010	11800
2011	13000
2012	13600
2013	14100
2014	15000
2015	15700

Source: www.worldbank.com